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**EVALUATION REPORT OF THE INTERNATIONAL NETWORK FOR BAMBOO
AND RATTAN (INBAR)**

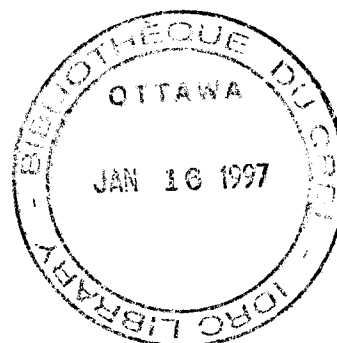
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EVALUATION REPORT OF THE INTERNATIONAL NETWORK FOR BAMBOO AND RATTAN (INBAR)

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1. INTRODUCTION

1. This report evaluates the progress of the International Network for Bamboo and Rattan's (INBAR) activities during its Phase 1 (1993 - 1996), and based on this evaluation makes proposals for strengthening the network aimed at the principal bottle necks for improving research and development within the subsectors. Following the terms of reference, the report focuses on the socio-economics programme and its potential impact on the rural poor. It also evaluates the integration of the several INBAR research thrusts. The details and information presented in this report are constrained by the limited time that was available.

2. BACKGROUND

2. In the mid-nineteen eighties, the International Development Research Centre (IDRC) initiated support for selected scientists engaged in individual bamboo and rattan research projects in national programmes in several Asian countries. A vast volume of material and data has been generated in the following decade of IDRC-led research, with the orientation being towards technical and bio-physical aspects.

3. The International Fund for Agricultural Development (IFAD) joined with IDRC to develop a formal collaborative research and development network in the region. Since mid-1989, IFAD and IDRC have jointly sponsored activities leading to the development of the Phase 1 activities. Five key activities undertaken during this period were of direct significance to the network:

(a) 'A Review of Research Needs for Bamboo and Rattan to the Year 2000' was carried out in 1989-1990, with the support of IFAD, IDRC, Rockefeller Foundation, the Overseas Development Administration (UK-ODA), the International Fund for Agricultural Research (INFAR) and the International Board for Plant Genetic Resources (IBPGR). The Review outlined a framework for consolidating existing research and provided a new research direction based on an in-depth needs assessment in the region. The Review's recommendations were endorsed by the international donor community in Paris, France, at the CGIAR Mid-term Meeting in May 1991).

(b) In December 1991, a meeting of the principal National Agricultural Research Systems (NARS) scientists, resource persons, policy makers and forestry administrators from 17 countries was convened in Chiangmai, Thailand, to discuss the contents of the Review to the Year 2000 (see (a) above), to assess the implications of the conclusions reached by the Review, and to examine the impact of its recommendations on the need for sharpening the focus of research and for prioritization of specific topics. The meeting recommended the need for streamlining collaborative research, making it less duplicative and more cost-effective.

(c) In April 1992, a joint IFAD/IDRC/Centre for International Forestry Research (CIFOR) - Australian Centre for International Agricultural Research (ACIAR) field mission to several Asian countries developed a coherent and comprehensive research and development programme. It emphasises the need for research coordination and evaluation, given the ready access to international scientific advice and state-of-the-art networking activities. Socio-economic research emerged as a unifying theme for the focus of the research, providing a linkage with development activities and making it more responsive to the constraints and opportunities of small-scale producers.

(d) An INBAR Orientation Meeting was held in New Delhi, India, in March 1993, with the participation of NARS scientists involved in bamboo and rattan research, potential donors to the programme, including IFAD, IDRC, the Canadian International Development Authority (CIDA) and the Food and Agriculture Organization of the United Nations' Forestry Research Support Programme for Asia and the Pacific (FAO/FORSPA), and collaborating institutions, including the International Union of Forestry Research Organizations (IUFRO) and the Natural Resources Institute (NRS-UK).

activities and the results have focused attention on important issues, and supported:

- a) the listing of bamboo as a priority planting species in Bangladesh;
- b) the development in Indonesia of a national version of the INBAR network;
- c) the inclusion of bamboo research as an area for assistance to developing countries by the Department of Foreign Affairs of China; and,
- d) bamboo being included for the first time in the National Five Year Plan (1995-2000) of China.

Table 1. INBAR's Socio-Economic and Policy Research Projects Since 1993.

No.	Projects	Country	Status
1.	Bamboo & Rattan Socio-Economic Database	Philippines	Completed
2.	Bamboo and Rattan Socio-Economic Database	China	Completed
3.	Bamboo and Rattan Socio-Economic Database	India	Completed
4.	Bamboo Strategy for Karjat Region, Maharashtra	India	Completed
5.	Bamboo and Rattan Socio-Economic Database	Thailand	Completed
6.	Bamboo and Rattan Socio-Economic Database	Nepal	Completed
7.	State of the Art Review on the Socio-Economics of Bamboo and Rattan in Indonesia	Indonesia	Completed
8.	The Bamboo Sector in the Cordilleras and Western Visayas: An Analysis of the Production to Consumption System	Philippines	Ongoing
9.	The Rattan Sector: A Case Study of an Extensive Production System	Philippines	Ongoing
10.	Case Study on Production-to-Consumption System of Rattan in Java	Indonesia	Ongoing
11.	Case Study on Socio-Economic Aspects: Production to Consumption Systems of Rattan in Kalimantan and Sulawesi	Indonesia	Ongoing
12.	Collection, Production and Marketing of Bamboo in Eastern Nepal	Nepal	Ongoing
13.	China Bamboo Sector: A Case Study of an Intensive Production System	China	Ongoing
14.	Bamboo and Rattan Socio-Economic Data Base	Indonesia	Ongoing
15.	Bamboo Production to Consumption System: A Case study for Central India	India	Ongoing
16.	Bamboo Production to Consumption System: A Case study for Kerala	India	Ongoing

Redefining the Scope of Socio-Economic Case Studies

10. The data base studies and the case studies conducted during Phase 1 have contributed to a better understanding of the production-to-consumption systems for bamboo and rattan thereby constituting a concrete basis for further studies. Current studies have increased awareness, research capabilities, and have been used in support of national government policies. Further, they provided an important forum for INBAR participants to exchange information and make

new working contacts.

11. Building on the information and experience gained, Phase 2 studies would be designed to identify research and development options. They might be better termed 'Strategic Orientation Case Studies'. Specific guidelines would homogenise research and report writing to allow governments and potential financing bodies ready access to useful project identification data.

12. The very real increase of the knowledge base over the last decade reinforces the original assessment that rural peoples' livelihoods depend on bamboo and rattan in a number of important ways, and they need assistance in maintaining and strengthening their livelihood systems. However, our present understanding leaves us with few clear-cut prescriptions for actions in many cases. 'Strategic Orientation Case Studies', designed to focus on household and community livelihood security might lead to clear-cut prescriptions for research and development. Clearly 'household or community livelihood security' is most accurately and usefully understood as an umbrella term denoting a wide range of activities which link rural people with bamboo and rattan, and the products derived from them. In addition, a range of on and off-farm activities play crucial roles for many households and communities who derive some of their livelihood from bamboo and rattan. Therefore analyzing the entire agrarian system of which bamboo and/or rattan play an important part, and documenting how changes in one part of the system affect the system as a whole is clearly important to identification of most appropriate the research and development options.

13. In the past many donor funded research and development projects, designed to assist the rural poor, have failed due to errors or misjudgements in project preparation (the stage preceding project identification). Many of the design-related problems may be attributed to a poor diagnosis of the constraints to be addressed and to a pervasive optimism over possible solutions. Thus designs frequently ignored or passed superficially over crucial technical constraints and opportunities, limitations in institutional capacities or factors likely to affect the intended beneficiaries' responses to the opportunities to be provided by the project.

14. The important point is that implementation problems have occurred despite the adoption of recommended procedures and project analysis techniques at the preparation stage. The projects had also passed the added check of independent appraisal by the funding agency. This suggests that in many cases that the designers may have failed to recognise flaws in the underlying concepts on which the projects were based. Preparation may have been carried out correctly: it was perhaps the earlier stage(s) that was/were inadequate (i.e. at case studies and/or identification missions). Examining and refining alternative strategies was probably the aspect of project design that was most neglected. The case study and/or the identification mission of the development cycle is therefore indicated as a phase which is critical to successful project implementation.

Towards Development

15. If Phase 2 socio-economic case studies are to be tailored to better link research and development there are a number of important considerations which need to be made. Even if a project concept is reasonably well advanced, it would be useful to go over the proposal carefully from a 'livelihood' perspective to confirm the correctness of the diagnosis and the validity of objectives that might have been set for a potential project. Listed below are some questions that might be asked in a 'strategic orientation case study' to identify potential research and development options:

(a) Are the community livelihood constraints, problems or opportunities to be addressed properly diagnosed and understood? Is there really a need for a bamboo or rattan project, or would projects aimed at different sectors be more beneficial? Are there any over-riding constraints which cannot be readily overcome? Why has the proposed investment not already been made?

(b) Is there a good 'fit' between the proposals put forward and the livelihood priorities of the intended beneficiaries? Does the intended design offer the intended beneficiaries (often large numbers of small-scale farmers, rattan gatherers, livestock owners, etc.) sufficient incentives to play their part? In particular, are there technical opportunities for them to enhance their productivity without running what they see as unacceptable risks; have they the necessary cash, labour, land or other resources; can they reach the technical information, credit inputs or markets that they need in order to exploit the latent technical opportunities; will the returns from doing so justify the costs or perceived risks, as well as compete successfully with any other options which beneficiaries may have to improve their lives; are there any cultural barriers to the project's acceptability?

(c) Even if all of the prospective participants respond, would the project make the contribution to national development, and to the economy, which it is claimed? Does preliminary analysis suggest any alternative strategies that might be more effective in meeting social or economic goals?

(d) Are the stated objectives realistic and attainable, or are revisions needed in the goals? Should it be scaled down? Is the suggested time frame realistic?

(c) Does the proposal fit with national and sectorial policies and priorities? Is it also consistent with the current financing policies of the intended funding institutions?

(d) Are the proposed project actions the most appropriate for the declared overall aim, a coherent response to the specific constraints, problems or opportunities to be addressed, and on the right scale? Or would an alternative strategy and scale be better?

(e) Is the technological basis for the proposed actions well established?

(f) Is the government fully committed politically to playing its allotted role, and does it have laws, institutions, management skills and motivated staff needed to transform its political commitment into effective action? If not, is it prepared to make the policy or other adjustments required to ensure project success?

(g) Can the government or research institute mobilise the local resources - especially counterpart funding and skilled manpower - upon which successful investment will depend? Can this be done without drawing resources from equally deserving programmes?

(k) Has the borrowing country or institution the financial as well as the natural resources to maintain the project in the longer term, after external funding ends? That is, would the project be fiscally and environmentally sustainable?

(l) Will the benefits be obtained at the expense of unacceptable environmental or social side-effects? Can modifications be introduced into the project which would enhance its beneficial impact on poorer members of the population and on the environment?

16. Clearly the stage to which the project identification process can be taken will depend on whether socio-economic case studies were conducted in a given country during Phase 1 of INBAR's activities, and how effective the studies were. In any event there will not be positive answers to all of these questions. In practice multidisciplinary 'strategic orientation case study' teams would have to assess the weight of any negative conclusions and the extent to which they could undermine the ultimate feasibility of project proposals, or whether they can be harmlessly be side-stepped, while keeping in mind that as important as the bamboo and rattan sectors are, in most instances they are often not more than minor components of community livelihood systems.

17. Research and development options need to be compatible with the broader framework within which they are located. The 'strategic orientation case studies' would therefore the approach of:

(a) Review of the national and sectorial analyses, plans and priorities both of the government and potential financing agencies, and the relevant available information.

(b) Recognition of the opportunities which it is expected to exploit or the problems which the research or development projects are intended to overcome. Diagnosis of the underlying causes of the problems or of the factors which underpin the opportunities.

(c) Definition of ultimate and immediate objectives.

- (d) Conception of alternative possible solutions or research and development strategies, including an objective assessment of past and current efforts in the same or related fields.
- (e) Evaluation and comparison of the more promising options to be taken up. This needs to be done in various senses: from the point of view of attractiveness to the rural poor; in relation to the likely market demand for project output; from the standpoint of technical soundness and risks; taking into account of policy, managerial and cost implications for the government or participating institution; from the standpoint of the aims and priorities of the potential lender; and considering the impact on the national economy, environment and resource base.
- (f) Outline and prioritize the solution(s).
- (g) Provision of detailed guidance on the follow-up required to bring this to full preparation and an explanation of the main issues to be resolved if the project is to achieve its objectives.

Productions Systems Research

18. INBAR's productions systems research programme produced publications (see Annex 4), and has supported priority research (see Table 2 and 6) in the areas of: a) natural stand management; b) propagation technology; c) bamboo seed storage, testing and exchange; d) pest and disease management; e) provenance trials; f) bamboo farming systems; and, g) degraded lands.

Table 2. INBAR's Productions Systems Research Projects Since 1993.

No.	Projects	Country	Status
1.	Priority Species of Bamboo and Rattan in Asia	Asian	Completed
2.	Provenance Trials of Bamboo and Rattan	Sri Lanka	Ongoing
3.	Bamboo Agroforestry Techniques for Degraded Lands	India	Ongoing
4.	Pests of Bamboo in Asia	Asian	Report in preparation
5.	Diseases of Bamboo and Rattan in Asia	Asian	Completed
6.	Pests of Rattan in Asia	Asian	An illustrated manual on bamboo insect pests in preparation

Biodiversity, Genetic Resources and Conservation

19. INBAR's collaboration with IPGRI/APO and FAO/FORTIP has been effective in enabling progress to be made on assessment of resources, conservation of genetic material, characterization of diversity, and improvement of genetic material.

20. Superior genotypes for priority species have been identified. Genetic diversity studies using isozymes and molecular markers are being carried out on three rattan species in the Forest Research of Malaysia and on another in the Royal Forestry Department in Thailand. Research on seed characteristics and development, handling, and storage is being carried out in ASEAN Forest Tree Seed Centre in Thailand. Intensive ecogeographic surveys to assess the natural populations of bamboo and rattan, and to identify superior plants for *in situ* and *ex situ* conservation has started in India, China and Thailand. Data collection on *in situ* and *ex situ* genetic resources areas is proceeding in nine Asian countries. Herbarium surveys have been completed in India, Indonesia, Malaysia, Thailand and Sri Lanka.

21. The thrust of INBAR's research in the areas of biodiversity, genetic resources and conservation has important implications for not only bamboo and rattan but for forestry in general. Future integration, of socio-economic programme data together with that of medicinal

plants, food plants, etc., into IPGRI/APO survey results of *in situ* populations of bamboo or rattan, should provide needed insight for designing development projects. In addition, forthcoming publication of procedures and guidelines for bamboo and rattan are expected to prove invaluable.

Table 3. INBAR's Biodiversity, Genetic Resources and Conservation Projects Since 1993*.

No.	Projects	Country	Status
1.	Genetic Conservation of Bamboo and Rattan	China	Completed

* List not complete

Post Harvest Technology

22. INBAR's post harvest programme has contributed to establishment of grading standards, bamboo panel board production, and in indigenous equipment technology (see Table 4).

Table 4. INBAR's Post Harvest Technology Projects Since 1993.

No.	Projects	Country	Status
1.	Standards for Grading Bamboo and Rattan in Asia	Asian	Reports in print
2.	Project Title: Review of Bamboo Panel Board Potential	India	Report in preparation
3.	Survey of Indigenous Equipment Technology	India	Report in print

23. The concern for preservation and growth of natural forests is now widespread. The wood based industries in most countries of Asia, which traditionally depended on natural forests for their raw material requirements are in a crisis now. As a consequence, wood based industries, particularly sawmills and plywood mills are working too far below their capacity.

24. In view of the decline in wood supplies, the urgent need for research on wood substitutes based on renewable resources has been stressed and forest products research institutes are now according priority for such research. The substitution euphoria of replacement of wood by plastic, aluminium, steel, etc., has subsided due to energy considerations, non-degradable nature of products and limited source of supply. Apart from this, the socio-economic implications of wood substitution by renewable materials are highly significant as they will generate enormous employment opportunities in rural areas. The highest priority has been presently given to substitute wood by other renewable materials like plantation derived wood, residues derived in processing of such wood, forest residues, agriculture residues and other lignocellulosic materials for the production of panel products required in vital sectors like building, construction, housing and transport.

25. The potential of bamboo as wood substitute has been known for long and used as such in some limited applications. As bamboo is amongst the faster generators of lignocellulosic biomass and increasingly promoted in farm/social forestry programs and homesteads, it is logical that the above potential should be exploited to the fullest extent in the ongoing search for wood substitutes. Bamboo can be harvested in 2-4 year cycles and is far superior in its physical and mechanical properties compared to wood obtained from short rotation fast growing plantation species and is more versatile in its application potential than agricultural residues like bagasse. Moreover, in view of its long association with rural poor especially in the countries of Asia, improved and enhanced cultivation and utilisation of bamboo will lead to the creation of new employment and income generation opportunities.

26. Under a project sponsored by IDRC at the Indian Plywood Industries Research and Training Institute (IPIRTI), Bangalore, cost-effective technologies for production of bamboo mat board to replace plywood in some of the areas like housing, packaging, storage and transport were developed. During the first phase of the project, it achieved some environmental and socio-economic objectives. The direct benefits accrued viz., revival of bamboo mat weaving by women in remote rural and tribal areas, enhanced earning capacity of these people due to increased demand for woven mats, substitution of round wood from natural forests, creation of employment generation, testify the success of the project and underline the importance of further research.

27. Based on the success of the objectives in the first phase of the project, IDRC/IFAD/INBAR has approved Second Phase of the project on "Wood Substitutes" during 1995 with enlarged objectives such as development of economic resins based on both phenol-formaldehyde (PF) and Urea-formaldehyde (UF), development of composite panels such as wood veneer-bamboo composites and agriculture residue-bamboo composites, development of machinery required for processing of slivers of uniform dimensions aiming to produce superior and uniform quality products at lower cost and the socio-economic and environmental impact studies to determine the feasibility of bamboo mat board and to quantify the environmental and socio-economic benefit arising out of it.

28. Encouraging results are forthcoming with respect to development of UF resins. These are versatile as compared to PF resins with respect to faster cure rates at lower temperature, colourless gluelines and lower cost suitable for panels to be used under interior locations. Composite panels in combination with plantation species and bamboo mats have emerged as structural panels with improved dimensional stability effecting the replacement of wood to the extent of 50 per cent or even more.

29. Though the new technologies are emerging fast, adoption of the same is lacking due to inadequate dissemination of information, lack of training and trained personnel and also lack of transfer of technology to the target groups. Considering the merits of bamboo over others and its potential in the development and production of new generation panel products for wider applications in all spheres where wood is a suitable material, it is imperative to renew efforts for its full utilisation. Propagation of bamboo to meet the requirements of larger demand indirectly helps in preventing global warming which is of great concern in the context of climate change.

30. Keeping in view the relevance of bamboo in the present context, there is need to establish a regional centre for research and training in bamboo based composites under INBAR. IPIRTI in Bangalore would be a suitable institution for serving as the Regional Centre.

Program Thrusts:

31. The major programs of work to be undertaken by such a Regional Centre are the following:

General:

32. Development of appropriate technologies to substitute wood with bamboo for the production of environment friendly panel products leading to the conservation of natural forests which indirectly helps to prevent global warming and alleviate poverty.

Specific:

33. Further research for the refinement on the processes already developed, keeping in view

the commercialisation of the processes, would be pursued. Training would be imparted to trainees with suitable background drawn from different bamboo growing countries in order to propagate the technologies developed for better utilisation of bamboo. Due importance would be given to the various processes involved in the manufacture of the product, quality assurance and end use applications.

34. Development of bamboo based structural panel products suitable to be used for various vital sectors like housing, construction, packaging, transport, etc., would be explored. Composite panels comprising of bamboo mat-wood veneer, particularly from fast growing plantation grown species would be pursued aiming to reinforce low strength wood with high strength bamboo and also to produce panels with improved dimensional stability.

35. Importance would be given to develop appropriate application techniques to make use of composite panels developed and their performance evaluation in service conditions.

36. Development of appropriate technologies for the production of various grades of bamboo based particle board and their application techniques would be pursued.

37. Further studies would be conducted for the manufacture of bamboo based particle board bonded with inorganic binders. Appropriate end use applications would be evolved.

38. Efforts would be made to develop specialised bamboo based composites such as laminated bamboo for furniture, parquette flooring tiles, curtain plywood, moulded bamboo articles (chair sheets and back, household articles like trays and handicraft articles).

39. Facilities would be established for the development of overlays such as High Density overlays, Medium Density overlays, low pressure overlays required to upgrade the bamboo based panels on par with wood based panels and also to ensure improved durability and acceptability.

40. Establishment of an extension cell to facilitate adaptation of technologies developed in bamboo growing countries.

41. Regional Research Centre for Rattan Technology: A Regional Centre similar to the Bangalore Centre for bamboo may be established for rattan in Indonesia. Indonesia provides 90% of the rural supply of rattan.

Information, Technology and Transfer

42. INBAR's information, technology and transfer programme has linked strategic research with appropriate development interventions by primarily utilizing the national programmes in partner countries, where it has supported training courses and study tours, and through:

- a) production of publications (see Table 5 and Annexes 2 and 4);
- b) the conducting of workshops, conferences and seminars (see Annex 3);
- c) the establishment over the last decade of three information centres, viz., Tropical Bamboos at KFRI, India; Temperate Bamboos at the Chinese Academy of Forestry, China; and Rattan at FRIM, Malaysia;
- d) the ongoing development of an integrated Information System (INBARIS) for intended electronic access on IDRC's Pan Asia Network;
- e) publication of a quarterly newsletter with a circulation of about 500 (see Annex 3) and,
- f) creation of data bases of professionals (INBPR), projects (INBPJ), and bibliographies (INBBI).

Table 5. INBAR's Information, Technology and Transfer Projects Since 1993.

No.	Projects	Country	Status
1.	Bamboo Matboard Training Workshop	India	Completed
2.	Manual for Rattan Nursery Techniques	Malaysia	Completed
3.	Bamboo Enhancement, Cultivation and Training	China	Completed

Table 6. IDRC Funded Projects Administered by INBAR Since 1993.

No.	Projects	Country	Status
1.	Bamboo	Thailand	Completed
2.	Bamboo Phase 11	India	Completed
3.	Rattan Phase 11	India	Completed
4.	Bamboo Phase I	India	Completed
5.	Rattan Phase I	India	Completed
6.	Bamboo/Rattan	Vietnam	Completed
7.	Bamboo Mat Board	India	Completed
8.	Wood Substitutes	India	Ongoing
9.	Forest Products	Laos	Ongoing

4. RECOMMENDATIONS REGARDING SUITABLE DIRECTIONS FOR RESEARCH ACTION FOR THE NEXT DECADE

INBAR's Program Thrusts and Institutional Framework

A. Basic Guidelines

43.. INBAR would be a not-for-profit autonomous international scientific and developmental organization, governed by an international Board of Trustees (see Annex 7). It would be supported financially by a Consortium of Donors committed to promoting the ecological security of our planet and the livelihood security of the economically and socially underprivileged sections of the society in developing countries. The work of INBAR would be designed to promote international and national public good. Such "public good" research can be sustained only through public funding.

44. INBAR's Core Centre would be located at Guangzhou in China under an agreement with the Government of the People's Republic of China. It would be structured in the form of a Network of collaborating institutions located in all parts of the world - both developing and developed. The institutions participating in the Network may be either: a) wholly funded by INBAR; b) partially funded; or, c) participate on a cost-free basis. Cost free participation would be particularly relevant to institutions in industrialised countries working in frontier areas of technology like biotechnology.

B. INBAR's Vision

45. INBAR's triple goals would be:

- a) Strengthen the ecological security of our planet both by saving forests from denudation for the sake of wood based products, and by increasing carbon sequestration, taking advantage of bamboo ranking among the fastest generators of lignocellulosic biomass.
- b) Strengthen sustainable food security through the promotion of bamboo-based agro-forestry systems of solar harvesting and land and water utilisation, and

c) Strengthen the livelihood security of the resource poor families through the generation of eco-jobs at the village level through a wide range of market-driven manufacture of products from bamboo and rattan and through symbiotic social contracts between the corporate sector and families depending for their livelihoods on bamboo and rattan based enterprises.

C. INBAR's Mission

46. INBAR's mission would be to "Foster strategic, action, anticipatory and participatory research at the production and post harvest stages of bamboo and rattan based farming systems designed to promote on an ecologically sustainable basis agri-business enterprises which strengthen the food and livelihood security of resource poor families".

D. Programs and Budget

47. The budget should be research-agenda driven. Based on the research agenda suggested by the INBAR Task Force which met in Guangzhou on September 21-22, 1995 the following seven major program areas are suggested.

Program Area 1

48. Conservation, evaluation, enhancement and utilisation of agro-biodiversity with reference to bamboo and rattan based farming systems; INBAR would ensure that the equity provisions of the Convention on Biological Diversity with reference to sharing of economic benefits are effectively implemented.

Program Area 2

49. Sylvicultural, agronomic and production technologies which can help to improve productivity per units of area, water, time and energy without detriment to the long term production potential of the natural resource base.

Program Area 3

50. Post-harvest technologies including processing, value-addition and marketing, so as to help in increasing both farm and non-farm employment and income.

Program Area 4

51. Socio-economic and policy research designed to identify policy measures and delivery systems which can ensure that the economic benefits of new production and post-harvest technologies reach the unreached. Case studies coupled with multi-disciplinary constraints analysis should help to disaggregate technological, policy, infrastructural and organizational and management constraints so that appropriate remedial measures can be introduced. The basic approach of such studies would be through the livelihood security methodology, rather than merely on a production-consumption model of analysis.

Program Area 5

52. Training and capacity building: These programs would be tailored to meet the specific needs of each bamboo and rattan growing country. Training programs would include "learning by doing" exercises such as organization of demonstrations in farmer's fields.

Program Area 6

53. Networking among all relevant institutions in both developing and developed countries as well as in private and public sector industry, in order to ensure that the collective strength of INBAR is considerable, irrespective of the individual strengths of the participating institutions. An important Network would undertake popularisation of bamboo and rattan cultivation in agro-ecologically suitable non-traditional areas and in degraded lands. For example, there is great scope and need for bamboo and rattan cultivation in Cambodia for strengthening both ecological and livelihood security.

Program Area 7

54. Organization of an INBAR Information and Communication Service, based on a series of user-friendly multi-media databases. The INBAR Information Service would also operate a "Home Page" on the INTERNET. Among other activities, priority would be accorded to publications in local languages and to the preparation of video and audio material. The publication of an International Scientific Journal could also be undertaken after adequate preparation. The INBAR Information and Communication Service can disseminate information on issues like Intellectual Property Rights of tribal and rural families, patenting, plant variety protection legislation, etc.

E. Structure of the Programs

55. Each program would have both a vertical and horizontal dimension. The vertical dimension would help to achieve scientific and professional depth in the respective program area, while the horizontal dimension would bring about the needed integration of the seven major program thrusts. For this purpose, the Director General and the seven Program Directors would serve on an apex level Research Integration and Coordination Committee (RICC). This group would meet periodically at different locations and review the progress made in achieving the desirable extent of program integration. Since INBAR's research and other programs are for international public good, the RICC should develop internal Management Information and Monitoring Systems which would help to identify internal bottlenecks and introduce appropriate corrections. Suitable financial controls would have to be established and authority and accountability would have to be linked at all levels. The RICC to be effective would be supported by a "bottom-up" mechanism, which would enable continuous contacts with the various networks and grass root workers.

F. Bamboo and Rattan Demonstration, Training and Multiplication Centres

56. The organization of "Lab to Land" and "Land to Lab" programs are essential for bringing about a close match between research and training priorities and strategies and field level problems and realities. The Program Committee of the Board should take particular interest in such field level demonstration cum seed multiplication centres. Such centres should, in particular, be established near factories manufacturing bamboo mat board and other bamboo and rattan based products. Many such factories can come up, if the sourcing of the raw material at reasonable prices can be ensured on an assured basis.

57. These "Lab to Land" centres could be organised by National Research and Development Organizations, private sector industries and voluntary organizations. These are best established in small farmers' fields so that they can be both replicable and sustainable. In addition, demonstrations organized in small farmers' fields have a high credibility in terms of demonstration value and hence help to impart a self-propelling momentum to the spread of new technologies and material.

G. Networks

58. The different networks could be both factor and systems oriented. An important Network should be on "Women in Bamboo and Rattan farming Systems", so that the specific needs of women, with reference to their technological, management and marketing empowerment, are given explicit attention.

59. The Networks should pay particular attention to technology, techno-infrastructure, training and trade. The INBAR Information and Communication Service should maintain a database on the Networks.

60. An eminent professional in the field covered by the Network could be designated as Coordinator. The location of the Coordinator could vary, depending upon the person and tasks to be performed.

H. Institutional Framework

61. An urgent need is the development of INBAR into an autonomous, not-for-profit international scientific organization with its own legal entity. The autonomous INBAR would be governed by an International Board of Trustees. Table 7 shows a potential structure with the number of trustees being up to seventeen (16 Members + Chairperson) to give adequate representation by professionals and ex-officio members.

Table 7. Composition of Proposed Board of Trustees

Board Composition		No.
A. Members in their personal capacity		
Leading bamboo and rattan research, development and marketing specialists and world leaders in agriculture and forestry)		7
B. Ex-officio Members		
Director General		1
Members representing the Governments of China, India and Indonesia - the three principal host countries (China for Main Centre and India and Indonesia for Regional Technology Centres in Bamboo and Rattan respectively)		3
Members representing the Donor Consortium		3
Members representing the principal international institutional linkages (CIFOR, and ITTO)		2

62. The Board should represent a broad spectrum of expertise, including the area of fund raising and should reflect the geographical and gender dimensions of INBAR's R & D Programmes.

63. The Director General of INBAR located at its main headquarters in Guangzhou would service the Board. The Board would set up the following standing Committees (see Annex 7):

- a) Executive and Finance to be chaired by the Chairperson of the Board;
- b) Program to be chaired by an appropriate Member of the Board;
- c) Technology Sharing and Dissemination to be chaired by a Board Member with a strong commitment to taking technologies to the unreached and to ensuring that adequate attention is paid to women's technological and organizational empowerment; and,
- d) Audit to be chaired by a suitable Board Member representing the Donor Community.

64. The Board of Trustees would be responsible for policy decisions on all matters relating to

the functioning of INBAR and would appoint the Director General. Senior staff up to the level of Directors would be appointed by Board on the recommendation of the Director General. The rest of the international and national staff would be appointed by the Director General.

65. The various standing Committees of the Board, other than Executive and Finance Committee and Audit Committees, could include specialists who are not Members of the Board.

66. The first Board and Chairperson of the Board would be appointed by the Presidents of IDRC and IFAD in consultation with the other major donors.

I. Main Centre and Regional Centres

67. The main centre of INBAR would be located at Guangzhou in China under a suitable headquarters agreement. Two Regional Centres would be established for technology development and dissemination in bamboo and rattan. The Regional Technology Centre for Bamboo could be located at IPIRTI, Bangalore. The Regional Technology Centre for Rattan could be located in Indonesia, which is the world's largest producer of Rattan.

68. The INBAR Information and Communication Service could be located at a suitable institution with a track record in the development of data bases, publications and audio and video material.

J. Launching of INBAR

69. It would be appropriate if INBAR could be launched as an autonomous, international organization with a regular Board of Trustees on June 5, 1997, which marks the 5th anniversary of the adoption of Agenda 21, Forestry principles and the Biodiversity and Climate conventions at UNCED held in Rio-de Janeiro in June 1992.

70. This would be particularly appropriate since INBAR responds to the principles contained in the Biodiversity and Climate conventions and conforms to the programmes of Agenda 21 and the guidelines of the Rio forestry principles. In addition, INBAR responds to the needs of the Desertification Convention, the anti-poverty programmes of the UN Conference on Social development held at Copenhagen in 1995 and the gender dimensions of the Beijing Platform for Action adopted in Beijing in September 1995.

71. The Presidents of IDRC and IFAD could make the formal announcement of the launching of INBAR at the special session of the UN General Assembly to be held in June 1997 to consider the implementation of the Rio decisions.

The Next Steps

72. If the recommendations made in this report are acceptable, we suggest that action on the following may be initiated immediately.

73. IDRC could convene a Donors' meeting to present the proposed institutional structure and program of work and budget of INBAR for the next 10 years. At present, INBAR is supported financially by IDRC, IFAD, Government of Japan, Government of the Netherlands and the Peoples' Republic of China. It is suggested that CIDA may also be invited to join the initial Donor Consortium.

74. The legal framework for an autonomous INBAR may be finalised and steps taken to register the international organization in Hong Kong.

75. The headquarters agreement to locate INBAR's core centre in Guangzhou may be finalised soon, so that staff recruitment can be commenced. The headquarters' agreement may provide to the internationally recruited staff the privileges and immunities normally accorded to UN personnel under the U.N. Immunities and Privileges Act (see Annex 8 for examples of documentation).

76. Headquarters' agreements need to be developed with the Governments of India and Indonesia for locating the two Regional Technology Centres for Bamboo and Rattan respectively in these two countries.

77. IDRC and IFAD may initiate action to constitute the first International Board of Trustees for INBAR and to appoint the Chairperson of the Board.

78. A Search Committee may be constituted for selecting the first Director General.

79. Steps may be initiated to obtain GEF support for the autonomous INBAR, adopting the 3-step procedure developed by GEF for this purpose. At the same time, steps may be initiated to enlarge the Membership of the Donor Consortium, seeking support for the following three groups of activities:

- a) core support;
- b) restricted core support for specific program areas; and,
- c) special project support.

80. Suitable information material on the new INBAR needs to be prepared and widely disseminated.

81. IDRC may serve as the Implementing Agency on behalf of the Donor Consortium, since it has been the prime mover of the INBAR program so far. IDRC has also considerable experience and expertise in the development of international research institutions, like those of CGIAR.

ANNEX 1

STAFFING OF INBAR SECRETARIAT

- | | | |
|----|-----------------------|---|
| 1. | Dr. Cherla B. Sastry | Director |
| 2. | Mr. Brian Belcher | Principal Economist |
| 3. | Dr. I.V. Ramanuja Rao | Principal Scientist & Chief Editor |
| 4. | Dr. Madhav B. Karki | Information Technology & Transfer Specialist (Senior Visiting Fellow) |
| 5. | Prof. Trevor Williams | Science & Policy Advisor (Part-time) |
| 6. | Prof. Jules Janssen | INBAR European Coordinator (Honorary) |
| 7. | Ms. Grace Domingo | Program Assistant (Part-time) |
| 8. | Mr. Ashok.K. | Research Assistant |

ANNEX 2

INBAR MEETINGS/WORKSHOPS

Meeting/Workshop	Date	Place	No. of Participants	Representative Countries
1993				
INBAR Project Orientation Meeting	March 8-9	Delhi, India	28	India, China, Malaysia, Singapore, Bangladesh, Philippines, Indonesia, UK, Laos, Vietnam, USA, Sri Lanka, Australia, Thailand, Italy, Canada, PNG
INBAR Working Groups (Inception) Meeting	June - July 29-3	Singapore		Singapore, Malaysia, Thailand, India, Indonesia, China, Philippines, Vietnam, Nepal, Canada
Research Advisory Group Meeting	November - December 29-2	Delhi, India	5	India, China, Canada, USA, Malaysia
Expert Consultation on Priority Species of Bamboo and Rattan	December 7-10	Dehra Dun, India	15	India, UK, Malaysia, Italy, Singapore, Philippines, Indonesia, USA
1994				
Meeting of Working Group on Standardization of Methodologies for Provenance Trials of Bamboo and Rattan	January 23-25	Malaysia	5	Singapore, Malaysia, UK, Canada
Meeting of Working Group on Information, Training and Technology Transfer	February 21-23	Malaysia	5	India, Singapore, Malaysia, China
International Training Workshop on Bamboo Mat Board	February 21-26	Bangalore, India	13	Thailand, Nepal, Philippines, India, Nepal, China, Malaysia, Bangladesh, Canada, Laos
Expert Consultation on Constraints to Production of Bamboo and Rattan	May 9-13	Bangalore, India	30	Bangladesh, India, UK, Indonesia, Canada, Sri Lanka, Thailand, China, Italy, Malaysia, Singapore, Philippines, Japan, USA
Socio-economic Working Group Meeting	August 9-13	Bangkok, Thailand	9	India, Indonesia, China, Philippines, Thailand, Canada, Nepal
Research Advisory Group Meeting	September 1-5	Hangzhou, China	11	India, Canada, China, Thailand, Philippines, Indonesia, USA, Bangladesh, Singapore

ANNEX 2

INBAR MEETINGS/WORKSHOPS (Continued)

Meeting/Workshop	Date	Place	No. of Participants	Representative Countries
1995				
Training Course on Bamboo Cultivation and Utilization	October 4-20	Zhejiang, China	26	India, China, Indonesia, Nepal, Thailand, Bhutan, Philippines, Laos, Vietnam
Biodiversity and Genetic Resources Conservation Working Group Meeting	November 7-9	Singapore	10	India, Singapore, Bangladesh, Canada, Philippines, Indonesia, Malaysia
Post Harvest Technology Working Group Meeting	November 23-25	Manila, Philippines	9	India, Bangladesh, Philippines, Indonesia, Malaysia, Canada
INBAR Strategy Meeting	March 7-8	Kuala Lumpur, Malaysia	13	Malaysia, Singapore, India, Canada, Italy, USA
Socio-economic Working Group Workshop	March 13-17	Bandung, Indonesia	28	India, Indonesia, Nepal, Philippines, Thailand, China, Canada, USA
International Meeting on Inventory Techniques of Bamboo and Rattan	March 27-28	Kuala Lumpur, Malaysia	36	India, Malaysia, Singapore, Indonesia, China, UK, Laos, Philippines, Thailand, Canada
Expert Consultation on Genetic Enhancement of Bamboo and Rattan	May 8-12	Los Banos, Philippines	19	Malaysia, India, Bangladesh, Philippines, China, UK, Singapore, Canada, USA
Vth International Bamboo Workshop and IVth Bamboo Congress	June 19-22	Bali, Indonesia	369	Global, over 65 countries
INBAR Integrated Information Services (INBARIS) Workshop	August 29-31	Singapore	6	India, Malaysia, China, Singapore
INBAR Task Force Meeting	September 20-22	Guangzhou, China	11	China, India, Canada, UK, USA, Malaysia, Italy, Singapore
Bamboo Genetic Conservation Working Group Meeting	November 28-30	Jogjakarta, Indonesia	10	India, Indonesia, Singapore, Thailand
Bamboo and Rattan Socio-economics Data Base (China): Meeting to analyse results	December 11-15	Delhi, India	5	India, Canada, China, Indonesia, Nepal

ANNEX 2

INBAR MEETINGS/WORKSHOPS (Continued)

Meeting/Workshop	Date	Place	No. of Participants	Representative Countries
<i>1996</i>				
Socio-economic Project Analysis Meeting	March 25-28	Guangzhou, China	18	Canada, India, Nepal, China, Philippines, Indonesia
INBAR-IPGRI-CIRAD-FORET Training Course on Rattan Silviculture Taxonomy and Ecology	April 14-21	Sarawak, Malaysia	17	Bangladesh, India, Indonesia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam, Malaysia
INBAR-IPGRI -CIRAD-FORET Training Course on Rattan Taxonomy and Improvement	April 21-28	Kuching, Malaysia	20	Bangladesh, India, Nepal, Indonesia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam, Malaysia, Bangladesh, Denmark
INBAR-IDRC-IPGRI-ICIMOD-IOF Workshop on Role of Bamboo, Rattan and Medicinal Plants in Mountain Development	May 13-17	Pokhara, Nepal	23	Canada, China, India, Myanmar, Nepal, Pakistan, Thailand, Singapore, USA, UK, Italy

ANNEX 3

INBAR NEWSLETTER SUBSCRIPTION: [Country wise]

Country	Total Subscription	Professionals	Institutions	NGOs
Australia	16	5	5	6
Bangladesh	4	2	2	
Belgium	2	2		
Bhutan	4	4		
Brazil	4	2	2	
Burma	1	1		
Canada	11	4	2	5
Cameroon	1	1		
China	22	19	1	2
Chile	2	2		
Colombia	2	2		
Costa Rica	6	4	2	
Cuba	1	1		
Denmark	2	1	1	
Egypt	1	1		
France	5	2	2	1
Germany	5	5		
Guyana	1	1		
Hong Kong	2	2		
Japan	22	15	4	3
India	134	106	5	23
Indonesia	29	15	5	9
Italy	11	10	1	
Kenya	2	2		
Korea	1	1		
Malaysia	11	7	2	2
Mexico	3	2	1	
Nepal	8	7	1	
Netherlands	7	5	2	
New Zealand	3	3		
Nigeria	1	1		
Norway	2	2		
Paraguay	1	1		
Peru	1	1		
Philippines	34	27	2	5
Papua New Guinea	1	1		
Singapore	5	2	3	
Sri Lanka	12	8	2	2
Sweden	5	3	2	
Switzerland	5	2	1	2
Tanzania	1	1		
Thailand	17	14	2	1
Uganda	1	1		
UK	44	27	8	9
USA	47	24	9	14
Vietnam	3	2	1	
Zaire	1	1		
Zambia	3	2	1	
Zimbabwe	1	1		
TOTAL	508	355	69	84

ANNEX 4

INBAR PUBLICATIONS

No.	Title	Year of Publica- tion	Total Copies	Distribution		
				1994	1995	1996
TECHNICAL REPORTS						
1	Priority Species of Bamboo and Rattan	1994	500	50	115	23
2	Nursery Techniques for Rattan	1994	500	33	162	20
3	Bamboo Preservation Techniques - A Review	1994	500	45	180	32
4	Methodologies for Trials of Bamboo and Rattan	1994	500	56	173	65
5	Constraints to Production of Bamboo and Rattan	1994	500	25	170	30
6	A Manual for Vegetative Propagation of Bamboos	1995	500	0	182	68
7	Genetic Enhancement of Bamboo and Rattan	1995	500	0	174	66
8	Bali Workshop Proceedings	1996	500			
9	Indigenous Tools, Equipments and Technology for Processing Bamboo and Rattan	1996				
10	Diseases of Bamboos in Asia	1996	500			
11	Review of Bamboo Panel Board Potential	1996	500			
12	An Illustrated Manual of Pests of Bamboo in Asia	1996				
13	Inventory Techniques Meeting Proceedings Sept.	1996	500			
WORKING PAPERS						
1	A State of the Art Review on the Socio-Economics of the Bamboo and Rattan Sector in South-East Asia	1994	300	75	220	0
2	Socio-Economic Information on Rattan in Indonesia	1994	300	68	110	15
3	Bending Strength of Guadua Bamboo - Comparison of Different Testing Procedures	1994	300	32	85	26
4	Bamboo and Rattan Production-to-Consumption Systems: A Framework for Assessing Development Options	1995	300	0	45	38
5	Domestication and Improvement of Rattan	1995	300	0	36	49
6	Rattan Resources of China and Current Status of Conservation	1996	300			
7	Domestication and Breeding of Bamboo	1996	500			
8	Grading Rules for Rattan: A Survey of Existing Rules and Proposal for Standardisation	1996	500			
9	Diversity and Distribution of New World Bamboos	1996	300			
10	Bamboo Genetic Resources in Indonesia	1996	300			

ANNEX 4

INBAR PUBLICATIONS (Continued)

No.	Title	Year of Publication	Total Copies	Distribution		
				1994	1995	1996
GENERAL PUBLICATIONS						
1	Research Needs for Bamboo and Rattan to the Year 2000	1994	500	150	250	95
2	A Guide to the Collection of Bamboo	1989	500			
3	Propagation of Bamboo and Rattan through Tissue Culture	1994	500	15	85	20
4	Bamboo as an Engineering Material - An Annotated Bibliography	1994	500	10	90	20
5	Bamboo in Asia and the Pacific	1996	500	25	80	20
6	Bamboos - Current Research	1994	500	20	50	15
7	INBAR Brochure	1995	2000	500	500	
INBAR NEWSLETTER*						
1	Vol. 1 (No. 1)	1993	750			
2	Vol. 2 (Nos. 2-5)	1994	2250			
3	Vol. 3.1 to 3.4 (750x4)	1996	3000			

ANNEX 5

INBAR PROJECTS

INFORMATION TECHNOLOGY AND TRANSFER

1. **Project Title: Bamboo Matboard Training Workshop**
 Project No.: 92-1400
 Contact: Dr.P.M.Ganapathy, Bangalore
 Finance: CAD 25,200
 Status: Completed project. Out of the advance of CAD 5,000 (INR 117,424) provided to IPIRTI there was a saving of INR 31,314 (app. CAD 1,300), which they returned to IDRC on 26.8.94. Second workshop is being requested by members, which is proposed to be held in China - date is not finalized. A proposal has been received which is being reviewed

2. **Project Title: Manual for Rattan Nursery Techniques**
 Project No.: 92-1400
 Contact: Dr. Manokaran, FRIM and Aida Lapiz, ERDB
 Finance: CAD 3,600 (Rs.71,950)
 Status: This project has been completed in 1994 and the report was published jointly by INBAR and FRIM as INBAR Technical Report # 2 in 1994. All the budgeted money has been spent

3. **Project Title: Bamboo Enhancement and Cultivation Training, China**
 Project No.: 92-1400-6
 Contact: Prof. Fu Maoyi, SFRI (CAF), China
 Finance: CAD 30,000
 Status: Project completed

PRODUCTION

1. **Project Title: Priority Species of Bamboo and Rattan in Asia**
 Project No.: 92-1400-6
 Contact: IPGRI (A N Rao), Singapore
 Status: The activity was completed in 1994 and the report had been published as INBAR Technical report # 1 (edited by J.T. Williams and Ramanatha Rao, IPGRI)

2. **Project Title: Provenance Trials of Bamboo and Rattan**
 Project No.: 92-1400-7
 Contact: Dr. Gunasena - University of Peradeniya, Sri Lanka
 Dr. Ratan Lal Banik, BFRI, Bangladesh
 Dr. Boonchoob Boontawee, RFD, Thailand
 Dr. D.N.Tewari, ICFRE, Dehra Dun, India
 Status: Draft proposal on regional pilot bamboo provenance trials received from ICFRE on 25.10.94. Seeds of 4 provenance of *D.strictus* sent for trials to Bangladesh, Thailand and Sri Lanka by TFRI, Jabalpur. Monitor visits to Jabalpur and Thailand proposed. TFRI is undertaking field trials

3. **Project Title: Bamboo Agroforestry Techniques for Degraded Lands**
 Duration: 24 months (Oct. 1,94 to Sept. 30, 96)
 Project No.: 92-1400-8
 Contact: Dr. D.N. Tewari, ICFRE, Dehra Dun, India

Mr. Fu Maoyi, SFRI (CAF), China
 Mr. Boonchoob Boontawee, RFD, Thailand
 Finance: Out of total grant CAD 99,000, CAD 20,450 each (totalling CAD 61,350)
 has been disbursed to ICFRE, SFRI and RFD
 Status: ICFRE has started the project by identifying sites at TFRI, Jabalpur.
 ICFRE have started the work at TFRI. SFRI and RFD have to submit their
 progress report

4. Project Title: Pests of Bamboo in Asia

Duration: 12 months (Apr., 94 to Mar. 31, 95)
 Project No.: 92-1400-3
 Contact: Prof. R.V. Verma, KFRI
 Finance: CAD 8,100
 Disbursed CAD 4,600. Balance CAD 3,500
 Status: Final report will be ready by end Jun. 96.

5. Project Title: Diseases of Bamboo and Rattan in Asia

Project No.: 92-1400-3
 Duration: 12 months (Apr. 1, 94 to Mar. 31, 95)
 Contact: Dr. C. Mohanan, KFRI
 Finance: CAD 10,700
 Disbursed CAD 7,200. Balance CAD 3,500
 Status: Final report received

6. Project Title: Pests of Rattan in Asia

Project No.: 92-1400-4
 Duration: 12 months (Apr. 1, 94 to Mar. 31, 95)
 Contact: Mr. Wang Hajoie or Prof. Xu Tiansen, SFRI (CAF), China
 Finance: CAD 10,000
 Disbursed CAD 8,500. Balance CAD 1,500
 Status: Questionnaire survey in China and other Asian countries commenced in
 Jan. 15, 95. Thailand and Malaysia also participated. An illustrated manual
 on bamboo insect pests under preparation

POST HARVEST TECHNOLOGY

1. Project Title: Standards for Grading Bamboo and Rattan in Asia

Duration: 4 months (May 1, 94 to Aug. 31, 94)
 Project No.: 92-1400-5
 Contact: Dr. K.M. Bhat, KFRI, India
 Finance: CAD 6,200. Disbursed CAD 2,276. Balance CAD 3,923
 Status: Reports in print

2. Project Title: Review of Bamboo Panel Board Potential

Project No.: 92-1400-2
 Duration: 14 months (Feb. 1, 94 to Mar. 31, 95)
 Contact: Dr. V. Sivananda, IPIRTI, India
 Dr. Ganapathy, IPIRTI, India
 Dr. E. Bello, FPRDI, Philippines
 Prof. Zhu Huan Ming, Institute of Wood Industry (CAF), China
 Dr. J. Shields, FORINTEK, Canada
 Finance: CAD 33,000
 Status: Final report in preparation

3. **Project Title: Survey of Indigenous Equipment Technology**
 Project No.: 92-1400-7
 Duration: 6 months (Jul. 1, 94 to Dec. 31, 94)
 Contact: Dr. R. Gnanaharan, KFRI, India
 Dr. A. Mosteiro, FPRDI, Philippines
 Finance: CAD 4,500
 Status: Final report in print

GENETIC CONSERVATION

1. **Project Title: Genetic Conservation of Bamboo and Rattan in China**
 Project No.: 92-1400-12
 Duration: 2 months (Dec. 94 to Feb. 95)
 Contact: Fu Maoyi, SFRI (CAF), China
 Finance: USD 2,000
 Status: Final report received

SOCIO-ECONOMICS

1. **Project Title: State of the Art Review on the Socio-Economics of Bamboo and Rattan in Indonesia**
 Project No.:
 Contact: Dr. Anantha Duraiappah, National University of Singapore
 Finance: USD 3,000
 Status: Report had been published as INBAR Working Paper # 1 in Oct. 94.
2. **Project Title: Bamboo & Rattan Socio-Economic Database-Philippines**
 Project No.: 92-1400-9
 Duration: 6 months (Oct. 94 to Mar. 95)
 Contact: Dr. Isabelita Pabuayon, UPLB, Philippines
 Finance: USD 3,500
 Status: Final report received
3. **Project Title: Bamboo and Rattan Socio-Economic Database, China**
 Project No.: 92-1400-11
 Duration: 6 months (Nov. 94 to Apr. 95)
 Contact: Prof. Zhong Maogong, Research Institute of Forest Economics, Beijing
 Finance: CAD 6,167. Disbursed CAD 5,240. Balance CAD 927
 Status: Final report received
4. **Project Title: Bamboo Strategy for Karjat Region, Maharashtra, India**
 Project No.: 92-1400-10
 Duration: 24 months (Jan. 95 to Dec. 96)
 Contact: Mr. Kanwarjit Nagi, Academy of Dev. Science, Karjat, Maharashtra, India
 Finance: CAD 8,871. Disbursement CAD 5,315. Balance CAD 3,556
 Status: First instalment released in Feb. 95. Project ongoing
5. **Project Title: Bamboo and Rattan Socio-Economic Database, Thailand**
 Project No.: 92-1400-13
 Duration: 6 months (Jan. 15, 95 to July 15, 95)
 Contact: Prof. Songkram Thammincha, KU, Thailand
 Finance: USD 3,500
 Status: Project completed

6. **Project Title: Bamboo and Rattan Socio-Economic Database, Nepal**
Project No.: 92-1400-14
Duration: 4 months (Jan. 15, 95 to May 15, 95)
Contact: Dr. Madhav Karki, (Institute of Forestry), ATI, ANSAB
Finance: USD 2,989
Status: Project completed
7. **Project Title : Bamboo and Rattan Socio-Economic Database, India**
Project No.: 92-1400-15
Duration: 12 months
Contact: Dr. D.N. Tewari, ICFRE, Dehra Dun
Finance: Not finalized
Status : Project completed

ONGOING PROJECTS:

8. **Project Title: The Bamboo Sector in the Cordilleras and Western Visayas (Philippines): An Analysis of the Production to Consumption System**
Project No.: 92-1400-17
Duration: 9 months
Contact: Dr. Merlyn Rivera
Finance: CAD 18,309
9. **Project Title: The Philippine Rattan Sector: A Case Study of an Extensive Production System**
Project No.: 92-1400-18
Duration: 12 months
Contact: Dr. Isabelita Pabuayon
Finance: CAD 26,550
10. **Project Title: Case Study on Production-to-Consumption System of Rattan in Java, Indonesia**
Project No.: 92-1400-19
Duration: 12 months
Contact: Dr. Beni Nasendi
Finance: CAD 23,733
11. **Project Title: Case Study on Socio-Economic Aspects: Production to Consumption Systems of Rattan in Kalimantan and Sulawesi (Indonesia).**
Project No.: 92-1400-20
Duration: 12 months
Contact: Dr. Beni Nasendi
Finance: CAD 25,127
12. **Project Title: Collection, Production and Marketing of Bamboo in Eastern Nepal**
Project No.: 92-1400-21
Duration: 10 months
Contact: Dr. R.B. Joshi
Finance: CAD 21,057
13. **Project Title: China Bamboo Sector: A Case Study of an Intensive Production System**
Project No.: 92-1400-22
Duration: 12 months

Contact: Prof. Zhong Maogong
 Finance: CAD 22,302 (With CIFOR Collaboration)

14. **Project Title: Bamboo and Rattan Socio-Economic Data Base: Indonesia**
 Project No.: 92-1400-23
 Duration: 12 months
 Contact: Dr. Beni Nasendi
 Finance: CAD 8,283
15. **Project Title: Bamboo Production to Consumption System: A Case study for Central India**
 Project No.: 92-1400-24
 Duration: 12 months
 Contact: Dr. B.N. Gupta
 Finance: CAD 25,944
16. **Project Title: Bamboo Production to Consumption System: A Case study for Kerala**
 Project No.: 92-1400-25
 Duration: 12 months
 Contact: Dr. P.M. Mathew
 Finance: CAD 10,250

IDRC FUNDED PROJECTS (ADMINISTERED BY INBAR)

COMPLETED

1. **Project Title: Bamboo (Thailand)**
 Project No.: 90-0348
 Contact: Dr. Songkram Thammincha (Kasetsart University)
 Dr. Boonchoob Boontawee (Royal Forest Department)
 Finance: CAD 146,310 (CAD86,280 - KU and CAD 60,030 - RFD)
 Status: Reports received
2. **Project Title: Bamboo (India) Phase II**
 Project No.: 90-0198
 Contact: Dr. K.S.S. Nair
 Finance: CAD 156,560
 Status: Reports received
3. **Project Title: Rattan (India)**
 Project No.: 90-0199
 Contact: Dr. K.S.S. Nair
 Finance: CAD 158,220
 Status: Reports received
4. **Project Title: Bamboo (India) Phase I**
 Project No.: 86-0235
 Contact: Dr. K.S.S. Nair
 Finance: CAD 137,000
 Status: Reports received
5. **Project Title: Rattan (India) Phase I**
 Project No.: 86-0236
 Contact: Dr. K.S.S. Nair

Finance: CAD 163,000
Status: Reports received

6. **Project Title: Bamboo/Rattan (Vietnam)**
Project No.: 92-8001
Contact: Dr. Ha Chu Chu
Finance: CAD 74,860
Status: Reports received

7. **Project Title: Bamboo Mat Board**
Project No.: 89-0228
Contact: Dr. P.M. Ganapathy
Finance: CAD 189,605
Status: Reports received

ONGOING

8. **Project Title: Wood Substitutes (India)**
Project No.: 93-8309
Contact: Dr. K.A. Kushalappa
Finance: CAD 149,800
Status: On-going

9. **Project Title: Forest Products (Laos)**
Project No.: 91-0065
Contact: Mr. Khamphone Sengdala
Finance: CAD 125,160
Status: Extension given to complete the socio-economics research and taxonomic work

ANNEX 6

RECENT HIGHLIGHTS WITHIN THE BAMBOO AND RATTAN SECTORS

Awards

Rattan Project (China) supported by IDRC from 1985 to 1991 won the first S&T Award of the Ministry of Forestry of China.

The comprehensive research on rattan' received the First Class Award for Advances in Science and Technology by the Ministry in 1994.

'Research on Rattans in China' won the 1996 first class S&T Award of the State Science and Technology Commission.

In China, The Golden Prize was awarded to the preserved bamboo shoot products in a national exhibition for the exchange of applied technology.

Dr Jules Janssen, an INBAR participant, has been honoured by Her Majesty the Queen of the Netherlands, with the Royal Decoration of 'Officer in the Order of Oranje-Nassau' for his research on bamboo.

Mr Abdul Latif Mohmod, in addition to awards conferred by FRIM (funded by INBAR) won the National Invention Merit Award in 1993 and 1994, Malaysia Young Scientist Award (the only forestry researcher to receive the award) in 1993, and the Book Award (joint author) in 1993. He won the Scientific Achievement Award presented by IUFRO in 1995.

Publications

National publications and INBAR publications (see Annex 4).

Resource Improvement and Management

Creation of Anji Bamboo Garden - largest in the world, extending over 20 hectares and including 221 species. Has produced over 40,000 offsets for cultivation in China and elsewhere. Visited by 10,000 researchers, producers and tourists each year.

Five thousand hectares of rattan plantation established in China. A rattan herbarium of over 1,000 species established.

Rattan incorporated in 7,000 hectares of rubber plantations in Malaysia.

A 500 hectare demonstration bamboo plantation was established in Bangladesh.

Investment/return ratio on rattan plantation increased by over 25 per cent by employing technology developed by the network.

Intensive bamboo management technology developed in network research was adopted in 72,000 hectares resulting in income of USD 50 million to farmers.

Improved vegetative propagation techniques developed in Bangladesh and India.

Protocols developed for *in vitro* propagation developed in Bangladesh, India and Thailand.

Six national bamboo and rattan living collections were established.

Remote sensing techniques and GIS interventions were applied for resource assessment in India and Thailand.

Processing and Product Technology

Various improvements were made in the preservation process and utilization of bamboo shoots, resulting in improved profitability for processors and farmers alike.

Developed economical preservative treatment methods for bamboo in Bangladesh and India.

Simple preservative treatments were standardized for bamboo culms used as support for agricultural crops in India.

A simple rattan pole dryer, using local materials was developed in Malaysia.

Twenty five bamboo and rattan processing technologies and machines were

developed/designed, 11 of which were patented.

Improved bamboo mat board was developed in India.

Bamboo container floor board was developed in China.

A cement bonded rattan residue based building board was developed in the Philippines.

National and International Policy

Listing of bamboo as a priority planting species in Bangladesh as a result of data generated in network supported research.

Recognizing the useful role of the INBAR, Indonesia has decided to develop a national version of the network.

Inclusion of bamboo research as an area for assistance to developing countries by the Department of Foreign affairs of China.

Bamboo was included for the first time in the National Five Year Plan (1995 - 2000) of China as a result of the thrust given by network supported research.

Human Resources Development

Thirty four training courses were conducted for entrepreneurs in bamboo and rattan based enterprises (600 people trained) in Malaysia.

Training in bamboo cultivation techniques for 5,000 people (foresters, farmers, NGOs, etc.) in Bangladesh.

Nine hundred local and 200 foreign people trained in bamboo cultivation in China.

Based on network supported research, a cane training and technology centre was developed in India.

INBAR workshops conducted in India demonstrated bamboo and cane craftsmanship.

Information Transfer

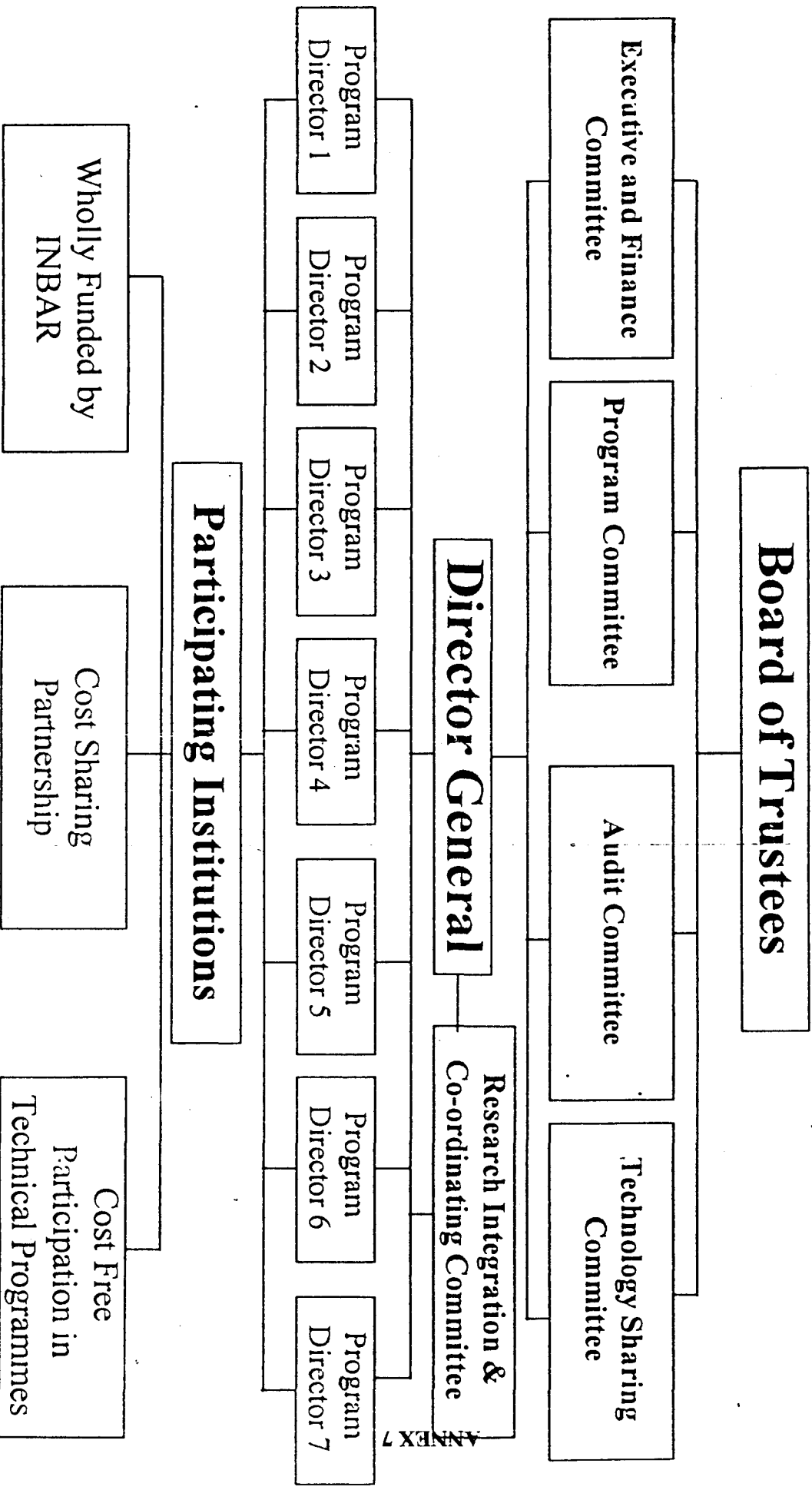
Three INBAR Information Centres (2 for bamboo and 1 for rattan) were established and maintained.

Sixteen INBAR publications were made available.

Eight issues of INBAR's quarterly newsletter were published.

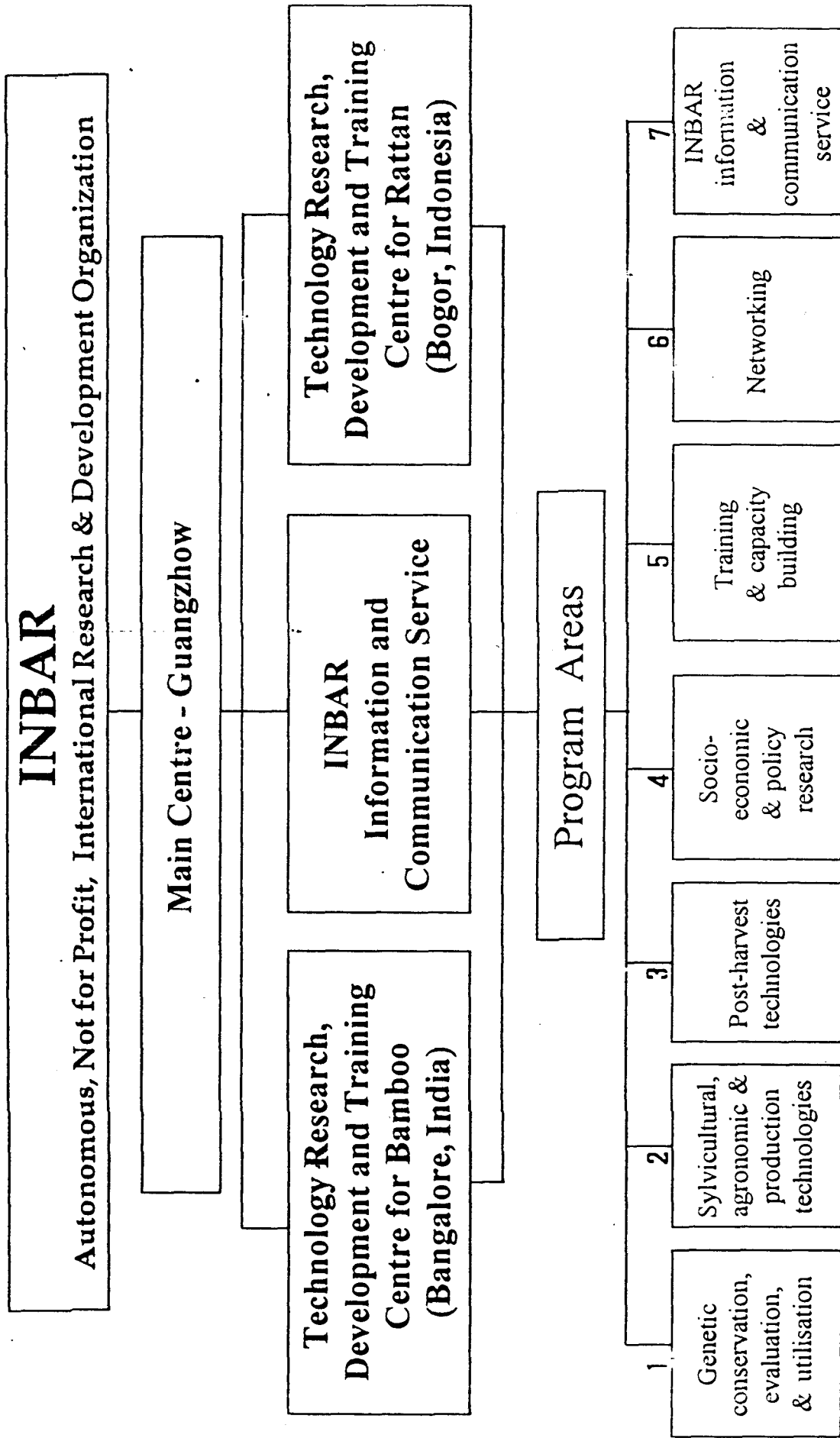
INBAR

(Policy Formulation and Program Implementation)

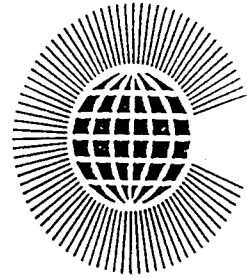


M.S.Swaminathan & Dene Cuthbertson

Proposed Organisation



M.S.Swaminathan & Dene Cuthbertson



AGREEMENT

between

THE GOVERNMENT OF THE
CO-OPERATIVE REPUBLIC OF GUYANA

and

THE COMMONWEALTH SECRETARIAT

for the establishment of the

IWOKRAMA INTERNATIONAL CENTRE FOR
RAIN FOREST CONSERVATION
AND DEVELOPMENT

AGREEMENT

between

THE GOVERNMENT OF GUYANA

and

THE COMMONWEALTH SECRETARIAT

for the establishment of the

IWOKRAMA INTERNATIONAL CENTRE FOR
RAIN FOREST CONSIDERATION AND DEVELOPMENT

PREAMBLE

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CHAPTER I

THE INTERNATIONAL CENTRE

Article 1

Iwokrama International Centre, Iwokrama International
Rain Forest Programme

The Iwokrama International Centre for Rain Forest Conservation and Development shall implement the Iwokrama Rain Forest Programme by undertaking research, training and the development of technologies which will promote the conservation and the sustainable and equitable use of tropical rain forests in a manner that will lead to lasting ecological, economic and social benefits to the people of Guyana and to the world in general.

Article 2

The Nature and Objectives of the Programme

The Programme shall be a collaborative effort of Guyana and the international community. Its principal objectives shall be to conserve biological diversity and promote sustainable management and utilisation of the Programme Site; and to study, develop and demonstrate methods and techniques for the conservation and equitable and sustainable utilisation of tropical rain forests that will bring lasting ecological, economic and social benefits to the people of Guyana and contribute to the world's knowledge of critical aspects of rain forest management and development.

Interpretation

In this Agreement -

- (a) "Act" means the Iwokrama International Centre for Rain Forest Conservation and Development Programme Act 1995;
- (b) "Biological Diversity", "Programme Site", "Sustainable Utilisation" and "Wilderness Preserve" have the meanings assigned to them by section 2 of the Act;
- (c) "Board" means the Board of Trustees, established under Article 11, being an organ of the Centre, which is declared a body corporate under section 3(1) of the Act.

Article 4

Location of Headquarters, Campus, Laboratories, etc

The headquarters and campus of the Centre with its associated laboratories, and other research, training, communications and related facilities, shall be located at Turkeyen, Greater Georgetown, in an area of land belonging to the University of Guyana, as agreed between the Government of Guyana and the University of Guyana, which land shall be demarcated and made available by the University for the use of the Centre.

Article 5

Core Programmes of the Iwokrama International Centre

The Centre shall have major core programmes for its research and training activities which shall include -

- (a) sustainable management of the tropical rain forest;
- (b) conservation and utilisation of biodiversity;
- (c) forestry research;

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PREAMBLE

WHEREAS the President of Guyana, at the Commonwealth Heads of Government Meeting at Kuala Lumpur in 1989, offered to make available a part of Guyana's tropical rain forest (since determined to be 360,000 hectares) for use by the international community, under Commonwealth auspices, for developing and demonstrating methods for the sustainable utilisation of tropical rain forest resources and the conservation of biological diversity;

NOW THEREFORE, the Contracting Parties, being the Government of Guyana and the Commonwealth Secretariat;

REAFFIRMING the agreements of the United Nations Conference on Environment and Development adopted in Brazil in June 1992;

CONSCIOUS of the need for the Iwokrama International Centre to enable national and international linkages in developing, managing and promoting the sustainable management of tropical rain forests and to facilitate international cooperation in forest research, training and communication activities;

AWARE that the subject of forests is related to the entire range of environmental and development issues and opportunities; including the right to socio-economic development on a sustainable basis;

ACKNOWLEDGING that there is rich biological and cultural diversity in tropical rain forests which can be sustainably managed to meet the social, economic, ecological, cultural and spiritual human needs of present and future generations;

RECOGNISING the identity, culture and the right of indigenous people, their communities and other communities and forest dwellers;

HAVE AGREED AS FOLLOWS:

- (d) sustainable human development; and
- (e) information and communication.

Article 6

Main Activities and Functions of the Iwokrama International Centre

1. The activities of the Centre are to:-
 - (a) identify needs for planning and carrying out research, developing and making available methods and systems for the sustainable management and utilisation of the multiple resources of tropical forests and the conservation of biological diversity;
 - (b) demonstrate that tropical rain forests can maintain biological diversity while supporting economic activity;
 - (c) determine research priorities and enable scientists and scholars to conduct research;
 - (d) make necessary organisational and institutional arrangements for carrying out research programmes and projects;
 - (e) conduct training in sustainable tropical forestry management, utilisation and the conservation of biological diversity ;
 - (f) elaborate any proposals for action including specific projects for external financing;
 - (g) identify and contact potential external sources of funding for the execution of the activities of the Centre;
 - (h) promote effective links between research organisations, extension services and the scientific community;
 - (i) establish and strengthen links to existing information systems in order to speed up exchange of information on research, and training opportunities at international, national and regional institutions;
 - (j) organise and support symposia and seminars for the interchange and dissemination of ideas and information related to the management of the rain forest;

- (k) endeavour to preserve and maintain knowledge, innovations and practices of indigenous communities embodying traditional lifestyles relevant for the conservation and sustainable utilisation of biological diversity and promote their wider application with the involvement of the holders of such knowledge, innovations and practices; and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices;
- (l) establish linkages with relevant individuals, groups and organisations in Guyana and elsewhere for the exchange of information and ideas on matters relating to the work of the Centre; and
- (m) do all acts and things as may be found necessary, expedient, suitable or proper for the furtherance, accomplishment or attainment of any of the purposes and activities herein stated, or which shall appear, at any time, as conducive to or necessary and useful for the purposes and activities of the Centre.

2. The functions of the Centre are to -

- (a) undertake inventories and surveys of the Programme Site, prepare plans for, approve and undertake any works necessary for the development, protection and efficient management of the areas in the Programme Site, the Field Stations for the Centre and the corridor for the Surama-Kurupukari Road which passes through the Programme Site;
- (b) act as the principal agency or as co-ordinating agency for facilitating the undertaking of approved research programmes;
- (c) initiate and support the implementation of projects relating to the commercial utilisation of the Programme Site;
- (d) implement proper accounting procedures relating to all matters over which the Board has control, including the preparation of short and long terms budgets;
- (e) seek such other assistance as may be necessary for the purpose of securing the attainment of the objectives of the Programme;

- (f) adopt such measures as are practical and consistent with the purpose for which the Programme is established;
- (g) engage in such other activities and perform such other functions as in the opinion of the Board are calculated to facilitate the proper discharge of its functions or are incidental thereto.

Article 7

Co-operation Arrangements

1. The Centre shall encourage and facilitate the fullest co-operation in its activities by the international community in such a manner as may further its purposes or advance the objectives of the Programme, and shall take such measures as it may deem appropriate under the provisions of the Act or this Agreement to promote such co-operation.
2. The Centre may enter into such co-operative, collaborative and consultative arrangements with appropriate authorities in Guyana and outside Guyana for the development, management, protection and utilisation of the multiple resources of the Programme Site as may be necessary to achieve the objectives of the Programme.
3. The Centre may also enter into such joint research and other arrangements with relevant research or other organisations, entities, agencies or foundations or with private or public sector industry in Guyana and outside Guyana as may advance its purposes or benefit the Programme.

Article 8

Rights in Discoveries, Inventions and Improvements

1. The right in all discoveries and inventions and all improvements in respect of processes, apparatuses and machines made by an officer of the Centre or by any other person through the use of the Programme Site or the facilities of the Centre shall vest in and be the property of the Centre and shall be made available for use in the international

community subject to such terms and conditions including the payment of such fees or royalties as the Centre may determine:

Provided that the Government of Guyana shall have access to such discoveries, inventions and improvements in respect of processes, apparatuses and machines free of charge.

2. The Centre may, out of the funds of the Centre, pay to an officer of the Iwokrama International Centre who has made any discovery, invention or improvement referred to in paragraph 1 such reward or make such provision for the officer to benefit financially from that discovery, invention or improvement, as the Centre may determine.
3. The Centre shall develop and adopt procedures for recognising and rewarding the contributions of Amerindian and other rural communities in the conservation and improvement of genetic resources of economically useful plant and animal species. The Centre shall also take steps to protect, recognise and reward the intellectual knowledge and contributions of indigenous communities in the field of sustainable forest management through an appropriate intellectual property rights system.
4. The Centre may apply for letters patent in respect of any invention made by any officer of the Centre and shall, for the purpose of the Patents and Designs Act, Cap. 90:03 of the Laws of Guyana, be deemed the inventor.

Article 9

Report on Activities

The Centre shall, for submission on request of, or for the inspection of a member of the Donor Support Group or other donors, within three months after the end of each financial year, prepare a full explicit report of its activities throughout the preceding year and attach thereto a statement of accounts of the Centre audited in accordance with Article 20.

Office and Seal of the Iwokrama International Centre

1. The principal office of the Centre shall be located at its premises at Turkeyen, Greater Georgetown, Demerara, Guyana.
2. The Centre shall have an official seal approved by the Board.
3. The custody of the seal shall vest with the Board and the seal shall only be used by the authority of the Board and any instrument to which the seal is affixed shall be signed by the Secretary to the Board and countersigned by a trustee.

CHAPTER II

THE BOARD OF TRUSTEES

Article 11

Establishment of Board of Trustees

1. The Board of Trustees shall comprise:
 - (a) a Chairman who shall be appointed by the President of Guyana and the Commonwealth Secretary-General;
 - (b) four trustees appointed by the Government of Guyana, at least three of whom shall serve in an *ex officio* capacity, of whom one shall be an Amerindian;
 - (c) two trustees appointed by the Commonwealth Secretary-General; and
 - (d) eight other trustees, appointed jointly by the President of Guyana and the Commonwealth Secretary-General, on the basis of recommendations from the Donor Support Group and criteria such as professional expertise, gender, geographical representation, industrial expertise, fund raising capability,

expertise in environmental matters, economics and communications.

- (e) the Director - General, to be appointed by the Board in accordance with Article 16, shall be an ex officio trustee without the right to vote, and shall serve as the Secretary to the Board.
2. Trustees of the Board shall be appointed for three years and shall be eligible for re-appointment for another term of three years only: Provided that on the first appointment of Trustees of the Board, in an effort to ensure continuity of Board policies and operations, one of the trustees appointed under paragraph 1(b) other than the three ex officio trustees, and four of the trustees appointed under paragraph 1(d), shall be appointed for a period of eighteen months and shall not be eligible for re-appointment until eighteen months have lapsed from the date on which they ceased being trustees.
 3. The remuneration and travel expenses payable to the Chairman and other voting members of the Board of Trustees for their attendance at Board meetings and any other work undertaken by them for the purposes of the Programme or the International Centre shall, in the light of relevant international practice, be determined by the Board.

Article 12

Powers of the Board of Trustees

All the powers of the Centre shall be vested in the Board and the Board shall be responsible for the supervision of the general operations and governance of the Centre. The powers of the Board shall include the power -

- (a) to decide the policies and priorities of the work of the Centre;
- (b) to approve the programmes and operational plans of the Centre;
- (c) to approve all contractual programmes or agreements entered into by the Centre;
- (d) to establish policies and principles for the guidance of the Director-General in the appointment of the staff;

- (e) to select and appoint the Director- General who shall be the Secretary to the Board under terms as deemed necessary and appropriate;
- (f) to scrutinise, revise and approve the budget estimates for the Centre;
- (g) to approve annual reports and audited accounts;
- (h) to appoint auditors and independent review committees;
- (i) to invite consultants or observers to attend the Board meetings as deemed necessary;
- (j) to determine the policy for the conditions of service and remuneration of staff;
- (k) to approve financial procedures;
- (l) to approve other rules of procedure for the Centre as it deems to be necessary;
- (m) to receive, acquire or otherwise obtain from any governmental authority national or local, foreign or domestic, or from any corporation, company, association, person, firm, foundation, or other entity whether international, national or regional such charters, licences, rights and assistance, financial or otherwise, as are conducive to and necessary for the attainment of the purposes of the Centre;
- (n) to receive, acquire or otherwise obtain from any governmental authority, national or local, foreign or domestic, or from any corporation, company, association, person, firm, foundation or other entity whether international, national or regional such donation, grant, devise, bequest, or lease, either absolutely or in trust, contributions consisting of such properties, movable or immovable, including funds and valuable effects or things, as may be useful or necessary to carry out the purposes and activities of the Centre, and to hold, operate, administer, use, sell, convey or dispose of the said properties or valuable things;
- (o) to borrow money to such extent as may be authorised by the Board; and
- (p) to do such other acts or things as are conducive to or necessary in the furtherance of its specified powers.

Article 13

Establishment of Communications and Information Unit

There shall be established, as a unit of the Centre, a Communications and Information Unit for the purpose of providing access to, and disseminating information, relevant to the work of the Centre.

Article 14

Establishment of Standing Committees

The Board may establish and determine the functions of an Executive and Finance Committee, a Programme Committee, an Audit Committee, a Nominating Committee and such other Committees as the Board may deem necessary for the efficient discharge of its functions.

Article 15

Power to Delegate

Subject to this Agreement, the Board may delegate to any Standing Committee, or any trustee of the Board, or to the Director-General, the power and authority to carry out on its behalf such of its functions as the Board may determine.

Article 16

Director-General and Staff

1. The Board of Trustees, by a majority of all voting members of the Board, shall appoint a Director-General of the Programme and the Centre and decide his term of office.
2. The Director-General shall normally be appointed for a term of five years and may be re-appointed for a second term to be determined by

the Board. His appointment may be terminated for cause by a majority of all voting members of the Board.

3. The Director- General shall be the chief executive officer of the Centre, and shall be responsible to the Board for its operation and management and for ensuring that its programmes are properly developed and carried out and its objectives attained.
4. The Director- General shall implement the policies of the Board, follow the guidelines laid down by the Board for the functioning of the Centre and carry out the directions of the Board.
5. The Director- General shall
 - (a) develop and submit to the Board plans and schemes for the implementation of the research programmes and operational activities;
 - (b) recruit and appoint, subject to the approval of the Board, a highly qualified multi-disciplinary staff which shall be under his/her supervision;
 - (c) prepare the annual report referred to in Article 9 on the work of the Centre;
 - (d) prepare the annual budget of the Programme and the Centre for submission to the Board;
 - (e) keep and have available for review by the Board and other appropriate parties financial accounts and other records on a current basis;
 - (f) have done annually in accordance with Article 20 an independent audit of the financial records;
 - (g) perform such other functions as are entrusted to him/her by the Board.
6. The Director- General shall be the legal representative of the Centre, shall sign all deeds, contracts, agreements and other legal documents necessary for the operation of the Centre and may delegate such of his/her functions and to such extent as the Board may authorise.

7. The employment and selection of staff shall be based on professional competence bearing in mind the international character of the Centre, the paramount consideration in such employment and in the determination of conditions of service being the necessity of securing the highest standards of quality, efficiency and integrity.

Article 17

Meetings of the Board

1. The Board shall meet at such times as may be necessary or expedient for the transaction of business, and meetings of the Board shall be held at least twice in every year and at such places (including any place outside Guyana) and times and on such days as the Board may determine.
2. The Chairman may at any time call a special meeting of the Board within fifteen days of a requisition for that purpose addressed to him/her in writing by any four members.
3. Eight trustees of the Board shall form a quorum for the transaction of business at a meeting.
4. The Board shall elect a Vice-Chairman from its membership.
5. At a meeting of the Board the Chairman shall preside, or in his/her absence, the Vice-Chairman shall preside and in the absence of the Chairman and the Vice-Chairman the trustees present may appoint one of their members to act as Chairman for the meeting.
6. In voting at meetings of the Board, each trustee shall, subject to paragraph 1(e) of Article 11, be entitled to one vote. All decisions of the Board shall be by a simple majority of the number of trustees present and voting. However, in matters relating to the utilisation of resources of the Programme Site, decisions of the Board shall require the concurrence of the trustees appointed by the Government of Guyana.

7. Minutes in proper form of each meeting shall be recorded by the Secretary to the Board and shall be confirmed by the Board at a subsequent meeting.
8. The Board shall settle its own rules of procedure.

CHAPTER III

SUPPORT FOR IWOKRAMA INTERNATIONAL CENTRE

Article 18

Donor Support Group, Consortium of Collaborating Institutions, Advisory Panel on Sustainable Human Development

1. The Centre shall organise a Donor Support Group, a Consortium of Collaborating Institutions, and an Advisory Panel on Sustainable Human Development.
2. The Donor Support Group shall consist, *inter alia*, of representatives of bilateral and multilateral agencies, foundations, and private and public sector companies interested in providing resources for the core and other activities of the Centre and the Board shall, by virtue of its powers under Article 12, receive and acknowledge receipt of any such support.
3. The Consortium of Collaborating Institutions shall consist of Universities, technical, scientific and other research institutions interested in entering into partnerships with the Centre.
4. The Advisory Panel on Sustainable Human Development shall tender advice on issues relating to Amerindian welfare, environment, equity, employment, and advancement of women, as related to the work of the Centre. The members of the Panel shall include media experts, environmentalists, social scientists, human anthropologists, ecologists and representatives of women's and Amerindian organisations.

Article 19

Application of Funds

The expenses of the Centre, including the remuneration of the Director-General and other officers and employees, shall be paid out of the funds and resources of the Centre.

Article 20

Accounts and Audit

1. The financial year of the Centre shall end on the thirty first day of December.
2. The Centre shall keep proper accounts and other records in respect of its operations and the accounts shall be audited annually by an auditor appointed by the Board.
3. The Centre shall be responsible for settling any debt, liabilities or obligations from its assets.
4. The Board and its officers and employees shall grant to the auditor appointed under paragraph 2 access to all books, documents, cash and securities of the Centre and shall give him/her on request all such information as may be within their knowledge in relation to the operation of the Centre.
5. The Board shall prepare for submission to the Government of Guyana and the Commonwealth Secretariat and for inspection of a member of the Donor Support Group or other donors, within three months after the end of each year, a report of its activities throughout the preceding year and attach thereto a copy of the report of the audit undertaken under this article.

6. The Government of Guyana and the Commonwealth Secretariat after considering the report submitted under paragraph 5 may tender advice to the Board, which the Board, notwithstanding anything in this Agreement, shall take due cognisance of.
7. Where the accounts and other records indicate that the Centre has become self-financing through discoveries, inventions, improvements or the utilisation of the natural resources of the Programme Site, the net revenue shall be divided between the Government of Guyana and the Centre equally.

CHAPTER IV

TERMINATION OF OPERATIONS

Article 21

Termination of Operations

1. Subject to the approval of the President of Guyana and the Commonwealth Secretary General, the Board may by resolution adopted by a vote of not less than two-thirds of the trustees terminate this Agreement and the operations of the Centre. Assets remaining thereafter, including the Programme Site, shall thereafter vest with the Government of Guyana.
2. After such termination, the Centre shall cease all activities, except those incident to the orderly realisation, conservation and preservation of its assets and settlement of its obligations.

CHAPTER V

STATUS, IMMUNITIES, EXEMPTIONS AND PRIVILEGES

Article 22

Status of the Iwokrama International Centre

To enable the Centre effectively to fulfill its purposes and discharge its functions the status, immunities, exemptions and privileges set out in this Chapter shall be accorded the Centre in Guyana.

Article 23

Legal Status

The Centre shall have the legal capacity of a body corporate and in particular the capacity to enter into contracts and to acquire and dispose of movable and immovable property except the Programme Site.

Article 24

Immunities and Privileges of the Centre

The Centre shall have immunity from suit and process except -

- (a) in respect of a civil action for damage alleged to have been caused by a motor vehicle belonging to or operated on behalf of the Centre or in respect of a motor traffic offence involving such a vehicle; and
- (b) in respect of arbitration proceedings relating to any contract entered into by or on behalf of the Centre which relates to the business or commercial activity of the Centre.

Article 25

Contracts entered into by the Centre

Every contract entered into by or on behalf of the Centre which relates to the business or commercial activity of the Centre, if it does not contain an express provision for the reference of any dispute in connection with the contract to arbitration, shall be deemed to contain a provision that any such dispute shall accordingly be treated as an arbitration agreement for the purposes of the Arbitration Act, Cap. 7:03. of the Laws of Guyana.

Article 26

Freedom of Property from Restriction

1. Subject to paragraphs (2) and (3), the property and assets of the Centre wheresoever located and by whomsoever held shall be immune from search, requisition, confiscation, expropriation and any other form of seizure or foreclosure by executive, judicial or legislative action.
2. Nothing in paragraph (1) shall be construed as preventing the law enforcement authorities of Guyana from entering the Programme Site for the purposes of searching for and seizing any person or thing reasonably suspected of being related to the commission of a criminal offence by any person subject to the jurisdiction of the Courts of Guyana.
3. Where an arbitrator acting in accordance with an arbitration agreement referred to in Article 25 makes an award against the centre and a court orders the enforcement of such award, the provisions of paragraph (1) shall not be construed so as to prevent the seizure or foreclosure of property or assets to the extent necessary to satisfy the order of the court giving effect to the award.

Article 27

Immunity of Archives

The archives of the Centre shall be inviolable.

Article 28

Privileges of Communications

The official communications of the Centre shall be accorded the same treatment as the official communications of a diplomatic mission.

Article 29

Immunities and Privileges of Officers and Employees

1. The Chairman and other members of the Centre and resident officers and employees (and members of their immediate families) of the Centre -
 - (a) shall be immune from legal process with respect to acts performed by them in their official capacity except where immunity is expressly waived; this immunity shall not apply, however, to civil liability in the case of damage arising from a road traffic accident caused by any such person;
 - (b) where they are not local citizens or nationals, shall be granted the same immunities from immigration restrictions, aliens registration requirements and the same facilities as regards exchange restrictions as are accorded to the representatives, officials and employees of comparable rank of diplomatic missions;
 - (c) where they are not local citizens or nationals, shall be granted the same treatment in respect of facilities as is accorded to representatives, officials and employees of comparable rank of diplomatic missions.

2. Where any person referred to in paragraph 1 is entitled under any other law or convention to greater privileges and immunities than those provided for under this Agreement, such person shall be entitled to be accorded such greater privileges and immunities.

Article 30

Immunities from Taxation

1. The Centre, its assets, property, income and its operations and transactions authorised by this Agreement, shall be immune from all taxation including customs duties, consumption tax, capital gains tax, corporation tax, income tax, property tax and purchase tax and the Centre shall be immune from liability for the collection or payment of any tax or duty.
2. No tax shall be levied on or in respect of the remuneration and expenses paid to the Chairman and other members of the Board and salaries and emoluments paid by the Centre to the Director-General and other officers and employees of the Centre including experts performing services for the Centre. This provision shall only apply to officers and employees recruited from abroad.
3. No taxation of any kind shall be levied on any obligations or security issued by the Centre.

CHAPTER VI

AMENDMENTS, ARBITRATION

Article 31

Amendments

This Agreement may be amended in such manner as may be determined by the Board with the approval of the President of Guyana and the Commonwealth Secretary-General.

Article 32

Arbitration

1. Any dispute concerning the interpretation or application of this Agreement which is not settled by negotiation or other agreed mode of settlement shall be referred for final decision to an arbitral tribunal of three arbitrators. Each party to this Agreement shall appoint one arbitrator and the two arbitrators so appointed shall appoint the third who shall be Chairman of the tribunal. If within thirty days of the request for arbitration either party has not appointed an arbitrator or if within thirty days after the appointment of the two arbitrators the third arbitrator has not been appointed, either party to this Agreement may request the United Nations Secretary-General to make the necessary appointment. The arbitral tribunal shall adopt its own rules of procedure. However, the Chairman of the tribunal shall have the power to settle all questions of procedure in any case of disagreement with respect thereto.
2. A majority of votes of the arbitrators shall be sufficient to reach a decision which shall be final and binding upon the parties.

CHAPTER VIII

FINAL PROVISIONS

Article 33

Entry into Force

This Agreement shall enter into force when it has been signed by the Government of Guyana and the Commonwealth Secretariat.

Article 34

Inaugural Meeting

As soon as possible after this Agreement enters into force the Board shall convene its inaugural meeting.

IN WITNESS whereof, the undersigned, being duly authorised thereto, have affixed their signatures to this Agreement.

DONE in duplicate at Auckland, this ninth day of November
One Thousand Nine Hundred and Ninety Five.

For the Government of the
Co-operative Republic of Guyana

For the Commonwealth
Secretariat



H E Dr Cheddi Jagan MP
President of Guyana



H E Chief Emeka Anyaoku
Commonwealth Secretary-General

EXPLANATORY MEMORANDUM

This Bill provides the legal framework for the implementation of the Commonwealth-Government of Guyana Iwokrama International Rain Forest Programme, which resulted from the offer by Guyana at Kuala Lumpur in 1989 to make available 360,000 hectares of Guyana's tropical rain forest for the said Programme under Commonwealth auspices. The Bill establishes the Iwokrama International Centre as a corporate body to implement the said Programme.

The Bill incorporates as the Second Schedule, the Agreement between the Government of Guyana and the Commonwealth Secretariat for the establishment of the Iwokrama International Centre for Rain Forest Conservation and Development. This Agreement sets out the main activities and functions of the Iwokrama International Centre, provides for the rights in discoveries, inventions, and improvements and the establishment of a Communications and Information Unit and the establishment of its functions.

The Agreement provides for the establishment of a Board of Trustees which shall be responsible for the supervision of the general operations and governance of the Iwokrama International Centre. In particular the Board is vested with power to receive donations in whatever form and to issue receipt therefor and to borrow money. A Donor Support Group comprising multilateral, bilateral and other funding agencies will be established in order to mobilise funds for the operations of the Iwokrama International Centre.

The Centre shall demarcate and allocate portions of the Programme Site into areas for the Rain Forest Wilderness Preserve, and for the sustainable utilisation of the multiple resources of the tropical rain forest. The Minister shall, after consultation with the Centre, demarcate such area of the Programme Site as may be required for the purpose of the corridor for the Surama-Kurupukari stretch of the Lethem-Mabura Hill Road passing through the Programme Site, and the Centre shall allocate such area for the purpose. Not less than fifty per cent of the Programme Site shall be allocated for the area for the Sustainable Utilisation of the Multiple Resources of the

Tropical Rain Forest.

The Iwokrama International Centre shall enjoy exemption from tax and certain other immunities, exemption and privileges accorded to international organisations as set out in the Agreement.

The Iwokrama International Centre shall prepare an annual report and audited accounts in respect of its operations and activities for submission to the Government of Guyana and the Commonwealth Secretariat and for inspection by donors.

Minister

8. Management of area demarcated for Wilderness Preserve.
9. Management of area demarcated for the Sustainable Utilisation of the Multiple Resources of the Tropical Rain Forest -
Statue of limitation.
11. Preservation of secrecy.
12. Discussions.
13. Regulations, amendment of the Second Schedule.

FIRST SCHEDULE -

Programme Site

SECOND SCHEDULE-

Agreement dated 9th day of November, 1995 between the Government of the Co-operative Republic of Guyana and the Commonwealth Secretariat for the establishment of the Iwokrama International Centre for Forest Conservation and Development Programme.



GUYANA

ACT No. 7 OF 1995

TWOKRAMA INTERNATIONAL CENTRE FOR RAIN FOREST CONSERVATION AND
DEVELOPMENT ACT 1996

ARRANGEMENT OF SECTIONS

SECTION

- 1 Short title and commencement
- 2 Interpretation
- 3 Centre is body corporate
- 4 Programme Site
- 5 Control of Programme Site
- 6 Protection of Amerindian rights
- 7 Demarcation of Programme Site into areas

A BILL

Intituled

AN ACT to provide for the sustainable management and utilisation of approximately 360,000 hectares of Guyana's Tropical Rain Forest dedicated by the Government of Guyana as the Programme Site for the purposes of research by the Iwokrama International Centre to develop, demonstrate and make available to Guyana and the international community systems, methods and techniques for the sustainable management and utilisation of the multiple resources of the Tropical Forest and the conservation of biological diversity; and for matters incidental thereto.

A.D. 1996]

Short title and
commencement.

Interpretation.

Second Schedule

Enacted by the Parliament of Guyana:-

1. This Act may be cited as the Iwokrama International Centre for Rain Forest Conservation and Development Act 1996 and shall be deemed to have come into operation on the entry into force of the Agreement.
2. In this Act -
 - (a) "Agreement" means the Agreement between the Government of the Co-operative Republic of Guyana and the Commonwealth Secretariat for the establishment of the Iwokrama International Centre for Rain Forest Conservation and Development, set out in the Second Schedule dated 9th day of November, 1995;
 - (b) "Biological diversity" means the variety and variability among all living organisms found in the rain forest

and the ecosystems and ecological processes of which they are part;

- (c) "Board" means the Board of Trustees of the Iwokrama International Centre established under Article 11 of the Agreement;
- (d) "Centre" means the Iwokrama International Centre referred to in Article 23 of the Agreement and declared a corporate body under section 3;
- (e) "Minister" means the Minister charged with the responsibility of administering this Act;
- (f) "Programme" means the Iwokrama International Rain Forest Conservation and Development Programme;
- (g) "Programme Site" means the area of State Land demarcated and dedicated under section 4 to be the Programme Site for the Programme;
- (h) "Sustainable utilisation" means the use of the multiple *resources of the tropical rain forest so that they may yield the greatest benefits to present generations while maintaining their potential to meet the needs and aspirations of future generations;*
- (i) "Wilderness Preserve" means the area of the Programme Site demarcated and allocated under section 7(1) (a) for the establishment and maintenance of the Rain Forest Wilderness Preserve for conserving nature and maintaining natural processes in an undisturbed state in order to have ecologically representative examples of the natural environment

available for scientific study, environmental monitoring and education, and for the maintenance of genetic resources in a dynamic and evolutionary state.

Centre is body
corporate.

3. (1) The reference in Article 23 of the Agreement shall be construed as meaning that the Centre is a body corporate.
- (2) Articles 23 to 30 (inclusive) of the Agreement shall have the force of law in Guyana.

Programme Site.
First Schedule

4. (1) The area of State Land, as described and demarcated in the First Schedule and shown on the map (included herein for illustrative purposes only) thereto, representing approximately three hundred and sixty thousand hectares of Guyana's tropical rain forest is hereby dedicated to the international community by Guyana for the Programme to be executed in accordance with this Act and the Agreement.
- (2) The Programme Site shall be fully available at all times to the Centre for the pursuit of its activities under this Act and the Agreement.

Control of
Programme Site.

5. (1) Subject to the provisions of this Act, the Programme Site, with the exception of such areas as may be needed for the corridor for the Surama-Kurupukari stretch of the Lethem-Mabura Hill Road passing through the Programme Site, shall be under the control of the Centre whose authority over the Programme Site shall, in so far as it relates to the Programme and the functions of the Centre, be deferred to by any other person or authority notwithstanding any other written law:
- Provided that the Centre shall not be responsible for the

management or control of such areas of the Programme Site as the Government may, after consultation with the Centre, determine to be required for the corridor for the Surama-Kurupukari stretch of the Lethem-Mabura Hill road passing through the Programme Site.

- (2) Subject to section 6(1), and notwithstanding anything in any other written law -

(a) no mining, forestry or other resources utilisation activity shall be carried out on the Programme Site by any person other than the Centre, except with the prior written permission of the Centre; and

(b) no lease of land or permission to use land in the Programme Site shall be issued by any person other than the Centre, and all activities on the Programme Site shall be in accordance with regulations prescribed therefor under this Act.

- (3) Any person who contravenes the provisions of subsection (2) shall be liable on summary conviction to a fine of one hundred thousand dollars or to imprisonment for a period of one year, and where the offence is of a continuing nature, to a further fine not exceeding twenty-five thousand dollars for each day during which the offence continues after conviction.

Protection of
Amerindian Rights.

- 6.(1) Nothing in this Act shall be construed to prejudice, alter or affect any right or privilege heretofore legally or traditionally possessed, exercised or enjoyed by any Amerindian who has a particular connection with any area of land within or neighbouring the

Programme Site.

- Demarcation of
Programme Site into
areas.
- (2) To ensure adequate consultation with, and involvement of, the Amerindian community in the activities of the Programme, a process of dialogue and interchange of views with the said community shall be embarked upon by the Centre.
- 7.(1) The Centre shall demarcate and allocate portions of the Programme Site into the following areas and shall by notice publish such demarcation in the *Gazette* -
- (a) areas for the establishment and maintenance of the Rair Forest Wilderness Preserve;
- (b) areas for the sustainable utilisation of the multiple resources of the tropical rain forest.
- (2) The Minister shall, after consultation with the Centre, demarcate such area of the Programme Site as may be required for the purposes of the corridor for the Surama-Kurupukari stretch of the Lethem-Mabura Hill Road, passing through the Programme Site and the Centre shall allocate such area for the purpose; the Minister shall by notice publish such demarcation in the Gazette.
- (3) Approximately fifty *per cent* of the Programme Site shall be demarcated and allocated for the area for the sustainable utilisation of the multiple resources of the tropical rain forest.

Management of area
demarcated for Forest
Wilderness Preserve.

8. The area demarcated and allocated for the Wilderness Preserve shall be managed in accordance with the rules made by the Centre, and the Centre, in consultation with the Minister, shall be responsible for the protection and integrity of the area.

Management of area
demarcated for the
sustainable
utilization of the
multiple Resources of
the Tropical Rain
forest.

- 9.(1) The area demarcated and allocated for the sustainable utilisation of the multiple resources of the tropical rain forest shall be managed by the Centre.
(2) The Centre may grant permission for the utilisation of the resources within the area demarcated for the sustainable utilisation of the multiple resources of the tropical rain forest.
(3) No project for the utilisation of the resources of the area demarcated for the sustainable utilisation of the multiple resources of the tropical rain forest shall be allowed without there being a regime for its sustainable management, agreed with the Centre and established as a compulsory condition for its implementation.
(4) Projects undertaken within the area demarcated and allocated for the sustainable utilisation of the multiple resources of the tropical rain forest shall apply the research results and recommendations of the Centre and the Centre shall supervise the application of such recommendations to ensure that the resources of the area are utilised on a sustainable basis.

Limitation of.

10. No statute of limitation shall apply to any action or suit brought by the Centre or in respect of any property owned by the Centre.

Preservation of
secrecy.

11. Except for the purpose of the exercise of his functions or when lawfully required to do so by any court or under the provisions of any written law it shall be an offence for which the Minister may prescribe penalties for an officer or employee of the Centre to disclose any information which he has acquired in the course of the exercise of his functions.

- Discussions. 12. The Centre shall hold discussions with the Government as may be necessary in relation to the activities of the Centre and the Government may at any time when the Board is meeting request the Board to meet a representative of the Government, other than a trustee of the Board, for discussions on matters relating to the Centre.
- Regulations,
amendment of the
Second Schedule. 13. (1) The Centre may, with the approval of the Government, make regulations for carrying out the purpose of this Act, including regulations prescribing the fees, levies or other charges for the utilisation of the resources of the Programme Site and the procedure to be followed by the Centre or any of its units at meetings
- Second Schedule. (2) The Minister may by order, which shall be subject to negative resolution of the National Assembly, amended any penalty by this Act.
- (3) Where the agreement is amended under Article 31 of the Agreement, the Minister may, by order, amend the Second Schedule for the purpose of including therein the said amendment.

FIRST SCHEDULE S.4(1)

The tract of State land commences at the mouth and on the right bank of the Siparuni River, left bank Essequibo River, and its boundaries extend thence up the right bank Siparuni River to the mouth of the Takutu River, thence up the right bank Takutu River to the mouth of an unnamed creek situate at latitude $4^{\circ} 25' 54''$ N, longitude $59^{\circ} 16' 00''$ W (approx) thence up the right bank of the said unnamed creek to its source, thence due East (approx) for 2.5 kilometres (approx) to the left bank of an unnamed creek, thence down the left bank of the said unnamed creek to the left bank Sipariparu River, thence down the left bank Sipariparu River to the left bank Burro Burro River, thence across and up the right bank Burro Burro River to the mouth of Surama River, thence up the right bank Surama River to the Surama Lake, thence along the mean high water mark line on the northern shore of the Surama Lake to the mouth of the Manicole Creek, thence up the right bank Manicole Creek for about 4.4 kilometres, to a point opposite the mouth of an unnamed creek, thence up the right bank of the said unnamed creek to its source, thence due East for about 2.0 kilometres to the left bank Maushiparu River, thence down the left bank Maushiparu River, to a point opposite the mouth of an unnamed river situate at latitude $4^{\circ} 14' 40''$ N, longitude $58^{\circ} 55' 16''$ W, (approx), thence up the right bank of the said unnamed river, circling the southern foothills of the Iwokrama Mountains, to a point near its source at latitude $4^{\circ} 10' 57''$ N, longitude $58^{\circ} 42' 13''$ W (approx), thence in a South South Easterly direction (approx), along the winding track shown on topographic sheet No. 56 SE of the Lands and Surveys Department, for about 4.4 kilometres to a point situate at latitude $4^{\circ} 08' 45''$ N, longitude $58^{\circ} 41' 13''$ W (approx) on the left bank and near the source of an unnamed creek, thence down the left bank of the said unnamed creek to the left bank Ladysmith River, thence down the left bank Ladysmith River to the left bank Essequibo River, thence down the left bank Essequibo River to the point of commencement, at the mouth and on the right bank of Siparuni River

MAP to FIRST SCHEDULE s.4(1)

MAP OF IWOKRAMA

Iwokrama Programme Site

